

Ngaio Crequer analyses the **UNIVERSITIES' RESPONSES** to the UGC debate on strategy and examines current feeling about the committee's political nature and relationship with the Department of Education and Science (pages 10-11)



John O'Leary talks to one of Mrs Thatcher's most underestimated ministers. **PETER BROOKE**, under secretary for higher education (page 13)

Making a mark on mankind: Enid Hutchinson recalls the establishment of **WOMEN'S STUDIES** and its contribution to adult education (page 14)

Two dogs fighting under a carpet: Churchill's unforgettable image gives a fair flavour of **SOVIET LEADERSHIP STRUGGLE**. Alex Pravda tries to piece together what lies behind both the confusion and the official window-dressing (page 15)

CRISIS or constant peril? A. H. Halsey reviews *The Crisis of the University*, Peter Scott's study of the problems and opportunities facing higher education (page 18)

Home news	1-7
Letters to the editor	2
Don's Diary (Cunice Hinds)	4
Party Line (Ian Wrigglesworth)	6
Union View (Arthur Houston, EIS)	7
Overseas news	8-9
Articles	10-17
Noticeboard	12
Books	18-28
English books	24-28
Classified advertising	28-35

NEXT WEEK

The uses of history
Remembering C. S. Lewis
John Dunn reviews Ralph Miliband's *Class Power and State Power*
New chemistry books
Waiting for Clifford Odets

© TIMES NEWSPAPERS LIMITED, 1984
Printed by Times Newspapers Ltd, P.O. Box 7, 200 Gray's Inn Road, London WC1X 9EZ, England.
Distributed by Compendium Ltd, 57-61 Chancery Lane, London EC2A 3DF, and printed by Northampton News Ltd, Upper Mount, Northampton NN1 3JR. Editors: Ngaio Crequer and Peter Scott.
Newspaper at the Post Office, ISSN 0022-2583



HIGHER EDUCATION SUPPLEMENT
Priory House, St John's Lane, London EC1M 4BX. Telephone 01-253 3000

The medium not the message

The analysis by Ngaio Crequer of the universities' replies to the University Grants Committee's circular letter on a strategy for higher education in the 1990s (pages 10-11) reveals a pattern that is at the same time predictable and revealing. It is predictable in the sense that no university offers startlingly radical ideas about the future and every university reacts defensively to the more oppressive suggestions made in the UGC's letter. It is revealing in the important sense that this accumulation of replies provides an accurate snapshot of the hopes and fears of Britain's universities at the start of the post-Robbins age. Future historians of the universities will find the UGC's "great debate" a rich mine of material about their practices and mentalities in the 1980s.

But Sir Peter Swinnerton-Dyer's initiative is not designed to provide source material for future historians but to offer guidance for present policy-makers. Its success or failure must be assessed in this light. In terms of immediate utility the UGC will probably find it difficult to cross its collective heart and affirm that it has learnt much from the mountain of replies. And even if the "great debate" is viewed from the other end of the telescope few universities will honestly be able to claim that the process of drafting a reply for the UGC has had a dynamic effect on their institutional consciousness of future issues in higher education policy.

In fact the pattern of replies tends to confirm earlier suspicions that in terms of immediate policy making the UGC would have learnt much more by asking universities five or six of the most immediately relevant questions. Not only would the product of a more limited exercise have been more manageable; it might also have encouraged tauter responses from the universities. The tone of these responses might also have been significantly different and, some would argue, more helpful. The paraphernalia of a "great debate" - the intense if rather artificial publicity and the consequent pressure on universities to deliver dignified statements of their views on almost everything - in practice may have inhibited the development of a securer dialogue between universities and the state, which after all is the fundamental purpose of the UGC's initiative.

But Sir Peter was determined to have a bit of a show. He presumably hoped that the deliberately histrionic character of the "great debate" would loosen up the rigid orthodoxy of university attitudes. He presumably accepted the risk that it might have precisely the opposite effect by producing an emotive scenario which obliged universities to affirm in uncorroborated terms their loyalty to traditional values and practices and in which any hint of flexibility was likely to be labelled as treachery.

The replies suggest that Sir Peter has failed to pull it off. There is very little evidence of incipient flexibility and a great deal of evidence of entrenched orthodoxy. Perhaps that is the very point, which the UGC is trying to make, maybe as a prelude to abandoning any suggestion that it should articulate a universities' consensus and develop its own independent and radical policy? But that may still be too cynical a view.

In the old days the UGC kept hammering away at a limited number of standard policy items - student numbers, the unit of resource, the equipment grant, and so on. It may have been a dreary business at times but it at least kept the attention of the universities focused on the immediate policy agenda. It also demonstrated that the old-style UGC felt it had no special responsibility to coordinate or regulate the collective views of the universities on global issues like the future of the binary policy or the reform of the pattern of undergraduate courses.

The danger with the UGC's new style is that it may weaken its capacity to engage in a detailed pragmatic dialogue with universities on the impenetrable policy agenda while not significantly enhancing its ability to manipulate those larger issues of policy in which both ministers and civil servants in the Department of Education and Science will always insist on a large, even predominant say.

It is not yet clear whether the UGC has fallen into this trap. But there are worrying signs. The form and scale of the "great debate" does seem to have made it more difficult for the universities to see the trees for the wood. Their detailed views on the "hard" issues, the UGC's traditional shopping list, do tend to have been submerged by their rather vague views on the "soft" issues with which Sir Peter has tickled their fancies. The UGC has now set itself a double task: to disentangle the universities' detailed comments on the "hard" issues in order to develop administrative and financial policies that reflect these comments, and to manipulate the mass of responses on "soft" issues to build up a sensitive image of the universities' future possibilities. It is not an impossible task, but it is a very difficult task. The UGC by trying to do both may do neither.

Yet whatever difficulties it may create for the delicate operation of the UGC the "great debate" has still been an important and a positive initiative. On the central issue of future demand for higher education the UGC's initiative has provided a powerful focus for the discontent that so many people in universities feel about the mean-minded and minimalist projections of future student demand on which the DES appears to be basing its present plan.

Of course such discontent would have been expressed even if there had been no "great debate" but it is all a political game, but one in which it is important to have the weight of technical opinion on your side. Projections of future student demand are important in themselves, as indications of the ease or difficulty with which present participation rates can be maintained or improved. But they are even more important as "bids" for future public support that convince the Treasury. The mass of university views on this question has provided the DES with some useful ammunition in its Whitehall battles. If it serves to use it, the universities' replies on other

subjects are less happy. Their comments on the distinctiveness of universities and the future of the binary policy read rather like a *New Statesman* competition to produce the most patronizing remarks about polytechnics. Despite their routine support for a broader sixth form education their overwhelming rejection of any form of two-year qualification suggests that the universities' love affair with general higher education will remain unconsummated.

The weight of university opinion is also against any earmarking of the research element in the recurrent grant. Looking back over the post-Rothschild research scene it is difficult not to detect a strong whiff of King Canute, although the technical objections to earmarking are formidable. On the UGC itself the bulk of replies expresses a perverse and rather unrealistic view that can be summed up as "the UGC should be more on our side and less on theirs". Universities seem to want the committee to be more open and accountable and also like it was in the good old days. Only a few universities like Salford begin to come to terms with the urgent need to reform and modernize the UGC.

This is perhaps the key issue. For what matters at this stage about the UGC's "great debate" is the process as much as the product. The most important question is whether this is a sensible and creative way to develop future policy for the universities. Another almost as important question is whether the UGC with minimal reforms to itself can sustain this role, or whether the job should be handed over to a proper higher education commission. The actual content of the universities' replies is both secondary and short-lived by comparison. The medium is more important than the message.

Two rather crude interpretations of the political significance of the "great debate" are available at this stage in the game. The first is that it is a successful attempt to mobilize the universities against the oppressive intentions of the Government. The second is that the universities have been "set up" by being encouraged to display their conservatism and immobility. If the first is true the UGC's initiative may well have staved off another round of 1981-style cuts. If the second is true the universities may have lost their last feeble grip on their own future, because ministers might decide that they were incorrigibly inert and take all the important decisions.

Neither can really be said to be true on the evidence so far. The "great debate" has not produced a significant mobilization of university opinion - and another round of dramatic cuts, as opposed to insidious attrition, was never a likely political outcome. The "great debate" has displayed the universities in a defensive mood but hardly as reactionary diatribes beyond redemption - and their defensiveness is a natural reaction to any lack of institutional flexibility. No, whatever Sir Peter may imagine, his "great debate" is more about the UGC than about universities.



As you will all know, this university of ours has always regarded its library with a special sense of pride and affection. Hear, hear, vice chancellor. Thank you, Professor Duxbury. And we have been particularly fortunate over the years in being in charge of our library, man, who I know we all regard as the average professor - I refer, of course, to our chief librarian, Mr Dibsbery.

Hear, hear. Thank you, Professor Quantock. Now Mr Dibsbery has kindly agreed to join our discussion today because of the somewhat disturbing figures in the recent informal study by the departmental registrar of the book borrowing habits in this university. You recall that the recently published UGC figure for Sussex University indicated that one in ten of the books bought for their library between 1969 and 1973 had never been borrowed. Our own figures do cover a later period but show that we are doing slightly less well. Of 231 books bought in the last five years, 34% have never been borrowed, and an independent survey by a Home Office fornic team indicates that three quarters of these have never actually been moved since they were first placed on the shelves. Now I hope you will all agree with me that this is a serious state of affairs. There is, I think, no doubt, who will be inclined to look to the ordering strategies adopted by academic staff in the quest for an explanation. This certainly does seem most inadequate. From the earliest years of this university, we have rigorously adopted, what has come to be known, with reference to its oldest incumbent, as the "Leave it to Doctor Worm" technique - in which some books in each department are labelled with the job of library representative and then proceed to order anything whatsoever which tickles their fancy momentary less irrespective of price or course relevance.

Academic freedom. Academic freedom. Thank you, Professor Remond. So, it seems that we must look elsewhere for advice on the quality of work done at the colleges. Mr John Bevan, secretary of the NAB, said that the exercise was intended to produce changes for implementation in 1985/86. "It is an open examination which certainly could range anywhere from consolidating an institution's role by doing something positive to looking at mergers or closures."

More than 50 college and polytechnic departments were included in the review, which has had a stormy passage and is certain to cause further controversy when recommendations reach the NAB. The NAB's teacher education group was expected to be informed of the college names and the letters at the same time as the letters were sent out. The group and the chairman's study group are expected to discuss the responses before they go to the NAB and committees in July.

Early retirement. Give them early retirement. Do sit down, Professor Turner. You see, Mr Dibsbery, in the difficult days, with the UGC forever on the lookout for dire-dire statistics, it is simply no longer enough for you and your colleagues to sit back and catalogue and collate and shelve the books which have been randomly ordered by members of teaching staff. I'm afraid that you must also regard it as part of your official duties to borrow them.

The Times Higher Education Supplement

May 11, 1984 No 601 Price 60p



Saying hello, saying goodbye - there are always new faces to meet and farewells to be made in any merger as two members of the Royal Family found out when they paid separate visits to Bedford and Royal Holloway Colleges. The Queen Mother paid a farewell visit

to Bedford College, in Regent's Park, where she is seen talking to student union president Ms Delyth Morgan. Princess Anne, the London University Chancellor visited Royal Holloway College at Egham, to look at academic developments and see plans for the merger.

Shaky future faced by 12 colleges

by Karen Gold and John O'Leary

Letters were going out to 12 colleges of higher education this week from the National Advisory Body warning them that because of their size their future viability was in question. The list of 12 colleges was drawn up by the NAB chairman's study group as part of its investigation of diversified teacher training colleges. Each college will receive an individual letter, some recommending mergers, saying because their student numbers are in most cases around or below 500 full-time equivalent, they may not be viable.

The 12 colleges are Avery Hill, Bath, Charlotte Mason, Westhill, Newman, De La Salle, Westminster, Bishop Grosseteste, North Riding, West Midlands, Rolle and Hertfordshire. Union leaders expect that in the first wave of action - culminating in a half-day strike on May 31 - the action will hit ancillary services such as catering, security and cleaning. Final examinations at Glasgow University may be hit despite national union leaders' wishes. Transport and General Workers' Union convenor, at the university, Mr Tommy Young, said the strikes would result in a shutdown of buildings including examination halls.

"We're going to cause as much disruption as possible," he said. But TOWU national officer Mr Jack

Universities face summer of industrial discontent

by David Jobbins and Olga Wojtas

Universities face a summer of discontent as non-teaching staff embark on industrial action to win a higher pay offer. And action by academics is also likely to be agreed next week if the vice chancellors refuse to breach the 3 per cent pay norm.

Vice chancellors meet today to explore ways of finding extra money within the tight limits of the recurrent grant but even if spare cash is found it is not clear that they will use it to boost pay awards. They have only deviated once from the pay norm - to offer formally a 4 per cent deal to manual workers whom they are prepared to regard as a special case. This offer was rejected and all the non-teaching unions are calling on their members to take action including lighting strikes.

Union leaders expect that in the first wave of action - culminating in a half-day strike on May 31 - the action will hit ancillary services such as catering, security and cleaning. Final examinations at Glasgow University may be hit despite national union leaders' wishes. Transport and General Workers' Union convenor, at the university, Mr Tommy Young, said the strikes would result in a shutdown of buildings including examination halls.

Promotion policy 'costs too much'

by Jon Turney

Science Correspondent
The nation's official auditors have criticized the research councils' costly readiness to promote employees who remain in the same jobs.

The heads of the Agriculture and Food and Natural Environment research councils have been called before the House of Commons Public Accounts Committee next week to explain the auditors' findings, which are likely to offer ammunition to critics of council institutes.

A report from the National Audit Office says annual salary costs in the four largest research councils have risen by £5.3m since 1975 just through upgrading. And the Comptroller and Auditor General says that the NAB

Droney said: "The policy of the trade union side does not include disrupting exams."

Other targets include disruption of ceremonies and the lucrative summer conference trade. After a further meeting of Committee A this week leaders of the Association of University Teachers complained that although vice chancellors accepted the argument that lecturers were falling behind in pay terms they were determined not to break the pay norm.

AUT general secretary Ms Diana Warwick said: "Our members will be very angry and demoralized at the cavalier way the employers dismissed their fair and justified claim."

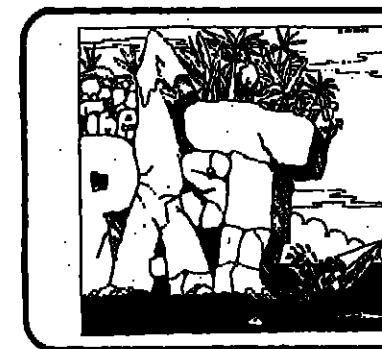
An emergency motion calling for action would be presented to the union's summer council in Manchester next week. The two sides are due to meet again on Monday but the chances

of an improved offer seem slim. Meanwhile there are signs of a growing revolt against the 4 per cent plus £330 for lecturers stuck at the top of the public sector bottom pay scale.

Regional executives of the National Association of Teachers in Further and Higher Education have recommended accepting the provisional offer and a number of branches are reported have rejected it.

The crunch decision by the national executive is to be taken this weekend. Scottish college lecturers have won their fight against a differential pay offer with a 4½ per cent award across the board.

Staff had been angered when the management side of the Scottish Joint Negotiating Committee informally offered local authority college lecturers 4½ per cent but only 3 per cent to staff in the centrally funded colleges of education and central institutions.



The past and the present, 13

Westfield in bid to sack tenured lecturers

by Ngaio Crequer

Westfield College, London, is proposing to put a redundancy procedure in motion to dismiss compulsorily three tenured physics lecturers.

A motion is to go from the staff reduction sub-board to the college council later this term and the three staff have received letters from the college to say this will happen.

The decision was made because of problems arising out of London University's restructuring plans, involving transfer of staff to different colleges. Staff who transfer are expected to take numbers of full-time equivalent students with them.

At Westfield, which is giving up physics, four lecturers are going or have gone to Queen Mary College and five to Royal Holloway College. But this has used up the quota of full-time

equivalents and left three surplus staff. The sub-board has also examined the problem of mathematics, where redundancies have been discussed but are likely to be avoided. Four maths staff are going to OMC and eight to RHC, and timetables have been drawn up. But new contracts, due to begin on August 1, have still not been issued and doubts have been expressed about the transfers.

University of London court officials last week met secretaries of the colleges involved to try to sort out the problem but no headway was made. The court meets again on May 16 and is certain to raise the issue.

According to the Association of University Teachers, Westfield has strong tenure provisions. Mr John Akter, deputy general secretary said: "We are appalled by this development."

Research reforms proposed

by Paul Flather

Radical proposals which would turn the Advisory Board for the Research Councils into a kind of select committee scrutinizing and deciding science policy and research programmes are being circulated among senior Whitehall policy makers.

They are contained in a paper produced by Sir Douglas Higgs, chairman of the Economic and Social Research Council, who believes that the 26 member council as presently constituted is too cumbersome to cope with the increasingly complex decisions it has to make.

He envisages giving far more power to the independent members of the council to sit in judgment on the five research councils which would each present their research programmes and solicit funds from the total science budget.

He also wants to set up a "think tank" modelled on the prime minister's policy unit to advise the council and look ahead at the kind of research likely to be needed over the next decade. It would consist of no more than two or three people seconded from the academic and industrial scientific community.

Sir Douglas gave clues to his thinking in the *Mind* lecture at Manchester University in March in which he said the ABRC and the Whitehall bureaucracy both needed to change. What we need is a "learning bureaucracy" rather than an "administering bureaucracy", he said.

He believes the current ABRC acts like a public forum with too many vested interests present for efficient decision-making. With funds scarce and a surfeit of important research programmes on offer, he believes it needs to have greater independence and greater back-up knowledge.

Sir David Phillips, chairman of the ABRC, shares many of Sir Douglas's ideas, and has been studying the proposals carefully. They are likely to be put on the agenda of the council's next meeting this month.

They also echo recommendations made in a study of commissioned research by Sir Ronald Mason, professor of chemistry at Sussex University, published last November, which said the system was not working well. He called for the ABRC to have a stronger role, a stronger independent membership, and more science support.

This idea of giving the ABRC an increasingly important managerial role at the heart of science policy has been gaining ground inside Whitehall, winning for example the support of Dr Robin Nicholson, chief scientist at the Cabinet Office.

However there could be opposition from the other four research councils.

It files in the face of understandings reached with university authorities and we will be taking strenuous action to counter this threat.

This will put into doubt any amalgamation with Westfield or any other university with an ILA (Inner London Education Authority) college, as ILA has said there must be no compulsory redundancies with mergers. He said legal advice was already being sought.

Westfield is currently talking to the Central School of Speech and Drama about merger or collaboration. Professor John Vaisey, principal of Westfield, said this report of proposed redundancy was highly emotional and exaggerated. Westfield, in collaboration with the university, was trying to ensure a solution of benefit to everyone.

Continued on page 3

Scotvec merger accelerated

by Olga Wojtas
Scottish Correspondent

The Secretary of State for Scotland has short-circuited negotiations of the merger between the Scottish Technical Education and Business Education Councils by announcing the conditions under which they will merge.

Mr George Younger obviously felt the two councils were moving too slowly towards the new merged Scottish Vocational Education Council, and has written to the chairman of the Scotvec/Scotbec joint steering group saying he intends to appoint Scotvec's chairman, and increase his nominees on the council from two to four.

Mr Younger is anxious for the merger to take place as soon as possible since Scotland is currently reforming the curriculum and assessment for 14 to 16-year-olds, and introducing a new modular system for post 16 education and training.

Scotvec will be responsible for the new Scottish non-advanced further education certificate, and Mr Younger says there will be consultation over a further merger between Scotvec and the Scottish Examination Board.

However, he points out that since the SED is a statutory body, this would require legislation, and warns that this "longer term issue" should not delay the first merger.

Mr Younger says in his letter that in talks with the joint steering group it had been agreed to aim at setting up Scotvec in August with Scotvec and Scotbec being dissolved next April, "but it remains to be seen whether this can be achieved." The Scottish Secretary says he was concerned by the joint steering group's proposals to increase staff.

Job prospects improve for Oxbridge graduates

by Paul Flather

Fewer Oxford and Cambridge graduates were out of work six months after graduation in 1983 than in the previous year, reflecting the first clear upturn in the fortunes of graduates for several years.

The latest annual reports from the appointments boards of the two universities show that the number at Cambridge still seeking work at the end of December last year was 171 (7 per cent) compared with 190 (8 per cent) the previous year, while at Oxford the figure was 174 (6.3 per cent) compared to 181 (6.4 per cent) in 1982.

In general Oxbridge graduates continue to be in high demand, with an unemployment rate expected again to be about half that of the national average. The national average in 1981/82 was between 11 and 12 per cent. The latest figures are expected in the next month.

Polys fear clawback from enterprises

by Owen Surridge

Some polytechnics have been acting illegally in order to make money from staff projects and consultancy work. But many fear that new arrangements proposed by the Government will lead to a loss of revenue and further legal obstacles.

While they are eager to take up the challenge offered in the government's plan to free them from current restrictions on commercial ventures, it was clear from the tone at a meeting of polytechnic representatives held in London last week that many have strong reservations. There are fears that local authorities may try to recoup, albeit deviously, any money they may make, that losses could arise and cause unpredictable damage, that the commercial world would not take such ventures seriously and that there could be legal snags to trap the unwary unless the proposed legislation is unusually articulate.

Some existing arrangements of doubtful legality are functioning effectively and without challenge and there is some reluctance among those responsible to give up their freedom of action without firm assurances that any new arrangements will allow them to continue without interference. It was equally clear that many polytechnics would welcome an opportunity to get round the legal restrictions which at present complicate and sometimes emasculate their ambitions to enter the innovative market place.

In the end they decided that any government scheme should give polytechnics corporate status to allow them to sign contracts, to keep profits without fear of seeing them syphoned off by local authorities, that they must be free to make their own arrangements for paying staff and that they should be free to draw on the expertise of teachers without reference to their teaching commitments. Behind this is a realization that in the competitive market it is often necessary to make rapid decisions and to be free to respond to opportunities without constraints.

Some existing arrangements of doubtful legality are functioning effectively and without challenge and there is some reluctance among those responsible to give up their freedom of action without firm assurances that any new arrangements will allow them to continue without interference. It was equally clear that many polytechnics would welcome an opportunity to get round the legal restrictions which at present complicate and sometimes emasculate their ambitions to enter the innovative market place.

In a recent lecture to the Institution of Electrical Engineers on "the university as a business" Professor Ashworth said the traditional management structure of universities was quite inappropriate for improving university-industry links.

It was a structure based on academic disciplines, whereas industry was concerned with immediate and pressing problems.

Universities need additional management structures if they are to forge a better relationship with industry, Professor John Ashworth, vice-chancellor of Salford University said.

In a recent lecture to the Institution of Electrical Engineers on "the university as a business" Professor Ashworth said the traditional management structure of universities was quite inappropriate for improving university-industry links. It was a structure based on academic disciplines, whereas industry was concerned with immediate and pressing problems.

Both appointments boards however warn against undue optimism over the figures. Oxford says it was still "not an easy year" for graduates of any university, while Cambridge says there is no reason "to be sanguine about an unemployment level as high as this." But it did note that the outlook for 1984 gave cause for "qualified optimism."

Oxford graduates appear to find jobs at least partly because they have adapted well to the new environment which involves all graduates looking to a wider range of employers, applying later in the year, taking lower level positions and considering vocational training before applying for jobs.

Oxbridge graduates also seem to have responded well to the new technological and financial boom. The number of Cambridge women for example entering commercial and computer consultancy work was up 4 per cent on last year, the number of men was the same.

It is a situation rich in irony; and the excesses of those in (myself included), who have had to do such an apparent volte face, have been convincing. Pressed to justify his new found affection for the Lords, one Labour council leader, of previously impeccable and carefully maintained credentials, claimed that he

felt no different from the way Churchill would have felt when he joined with Stalin to defeat the greater enemy of Nazism.

But there is a longer term danger that any "victory" by the Lords, however incomplete, could make the reform or abolition of the Lords much more difficult to achieve.

The truth about the Lords is that it is fundamentally ineffective in performing the one job by which it could conceivably be justified within a democratic system: that of acting as a revising chamber.

Academic studies have been sceptical, to say the least, of the efficacy of the Lords' role in securing major revisions to other legislation, and should have exploded the myths about the work of the Lords. But the myths remain.

More, they have been reinforced by marginal victories in the Lords

rather than attempt to change the traditional structure, which he defended, or make universities more like businesses, additional structures were necessary, and universities should ask for industry's help in trying to make a new structure effective.

Salford had tried to do this in two ways. It had set up the Salford University Industrial Centre Ltd for managing "customer-contractor" relationships.

This was a company limited by guarantee whose profits were given to the university. Legally, organisationally and managerially it was

quite independent of the university but 80 per cent of the staff's consultancy earnings passed through it. Rather than becoming more like a business, the university had set up a subsidiary.

Secondly, it had set up CAMPUS (Campaign to Promote the University of Salford) to manage its relationship with industry, decide research priorities and coordinate integrated chairs (chairs funded both by university and industry).

Professor Ashworth said it was too early to judge their success but the rate of acquiring new contracts by SUIC had increased tenfold, and staff research income had tripled.

During the meeting Dr N. Segal, a management consultant, said the responsibility for the success of the scheme linking higher education, industry and commerce lay with the government, not the universities.

Professor Gerry Fowler, director of the North East London Polytechnic, said that although the government proposals were supposed to overcome such difficulties there was a danger that local education authorities would pocket the proceeds by docking fund allocations. "We get round this difficulty by acting with other authorities outside the law. We have set up our own limited company, Nelco. I will not pretend there are no difficulties. Profits must not come back as money but as equipment, conference fees, travel for research and so on."

"In that way a local authority cannot recoup profits - but it still does not mean that it will not reduce pool allocations to reflect those." If the government was serious about its intentions, he said, it needed to look at the political imperatives and come up with some sensible proposals.

After the meeting Dr N. Segal, a management consultant, said the responsibility for the success of the scheme linking higher education, industry and commerce lay with the government, not the universities.

Professor Gerry Fowler, director of the North East London Polytechnic, said that although the government proposals were supposed to overcome such difficulties there was a danger that local education authorities would pocket the proceeds by docking fund allocations. "We get round this difficulty by acting with other authorities outside the law. We have set up our own limited company, Nelco. I will not pretend there are no difficulties. Profits must not come back as money but as equipment, conference fees, travel for research and so on."

"In that way a local authority cannot recoup profits - but it still does not mean that it will not reduce pool allocations to reflect those." If the government was serious about its intentions, he said, it needed to look at the political imperatives and come up with some sensible proposals.

After the meeting Dr N. Segal, a management consultant, said the responsibility for the success of the scheme linking higher education, industry and commerce lay with the government, not the universities.

Professor Gerry Fowler, director of the North East London Polytechnic, said that although the government proposals were supposed to overcome such difficulties there was a danger that local education authorities would pocket the proceeds by docking fund allocations. "We get round this difficulty by acting with other authorities outside the law. We have set up our own limited company, Nelco. I will not pretend there are no difficulties. Profits must not come back as money but as equipment, conference fees, travel for research and so on."

"In that way a local authority cannot recoup profits - but it still does not mean that it will not reduce pool allocations to reflect those." If the government was serious about its intentions, he said, it needed to look at the political imperatives and come up with some sensible proposals.

After the meeting Dr N. Segal, a management consultant, said the responsibility for the success of the scheme linking higher education, industry and commerce lay with the government, not the universities.

Professor Gerry Fowler, director of the North East London Polytechnic, said that although the government proposals were supposed to overcome such difficulties there was a danger that local education authorities would pocket the proceeds by docking fund allocations. "We get round this difficulty by acting with other authorities outside the law. We have set up our own limited company, Nelco. I will not pretend there are no difficulties. Profits must not come back as money but as equipment, conference fees, travel for research and so on."

During the meeting Dr N. Segal, a management consultant, said the responsibility for the success of the scheme linking higher education, industry and commerce lay with the government, not the universities.

Professor Gerry Fowler, director of the North East London Polytechnic, said that although the government proposals were supposed to overcome such difficulties there was a danger that local education authorities would pocket the proceeds by docking fund allocations. "We get round this difficulty by acting with other authorities outside the law. We have set up our own limited company, Nelco. I will not pretend there are no difficulties. Profits must not come back as money but as equipment, conference fees, travel for research and so on."

"In that way a local authority cannot recoup profits - but it still does not mean that it will not reduce pool allocations to reflect those." If the government was serious about its intentions, he said, it needed to look at the political imperatives and come up with some sensible proposals.

After the meeting Dr N. Segal, a management consultant, said the responsibility for the success of the scheme linking higher education, industry and commerce lay with the government, not the universities.

Professor Gerry Fowler, director of the North East London Polytechnic, said that although the government proposals were supposed to overcome such difficulties there was a danger that local education authorities would pocket the proceeds by docking fund allocations. "We get round this difficulty by acting with other authorities outside the law. We have set up our own limited company, Nelco. I will not pretend there are no difficulties. Profits must not come back as money but as equipment, conference fees, travel for research and so on."

"In that way a local authority cannot recoup profits - but it still does not mean that it will not reduce pool allocations to reflect those." If the government was serious about its intentions, he said, it needed to look at the political imperatives and come up with some sensible proposals.

After the meeting Dr N. Segal, a management consultant, said the responsibility for the success of the scheme linking higher education, industry and commerce lay with the government, not the universities.

Professor Gerry Fowler, director of the North East London Polytechnic, said that although the government proposals were supposed to overcome such difficulties there was a danger that local education authorities would pocket the proceeds by docking fund allocations. "We get round this difficulty by acting with other authorities outside the law. We have set up our own limited company, Nelco. I will not pretend there are no difficulties. Profits must not come back as money but as equipment, conference fees, travel for research and so on."

"In that way a local authority cannot recoup profits - but it still does not mean that it will not reduce pool allocations to reflect those." If the government was serious about its intentions, he said, it needed to look at the political imperatives and come up with some sensible proposals.

After the meeting Dr N. Segal, a management consultant, said the responsibility for the success of the scheme linking higher education, industry and commerce lay with the government, not the universities.

Professor Gerry Fowler, director of the North East London Polytechnic, said that although the government proposals were supposed to overcome such difficulties there was a danger that local education authorities would pocket the proceeds by docking fund allocations. "We get round this difficulty by acting with other authorities outside the law. We have set up our own limited company, Nelco. I will not pretend there are no difficulties. Profits must not come back as money but as equipment, conference fees, travel for research and so on."

"In that way a local authority cannot recoup profits - but it still does not mean that it will not reduce pool allocations to reflect those." If the government was serious about its intentions, he said, it needed to look at the political imperatives and come up with some sensible proposals.

After the meeting Dr N. Segal, a management consultant, said the responsibility for the success of the scheme linking higher education, industry and commerce lay with the government, not the universities.

Professor Gerry Fowler, director of the North East London Polytechnic, said that although the government proposals were supposed to overcome such difficulties there was a danger that local education authorities would pocket the proceeds by docking fund allocations. "We get round this difficulty by acting with other authorities outside the law. We have set up our own limited company, Nelco. I will not pretend there are no difficulties. Profits must not come back as money but as equipment, conference fees, travel for research and so on."

"In that way a local authority cannot recoup profits - but it still does not mean that it will not reduce pool allocations to reflect those." If the government was serious about its intentions, he said, it needed to look at the political imperatives and come up with some sensible proposals.

After the meeting Dr N. Segal, a management consultant, said the responsibility for the success of the scheme linking higher education, industry and commerce lay with the government, not the universities.

Professor Gerry Fowler, director of the North East London Polytechnic, said that although the government proposals were supposed to overcome such difficulties there was a danger that local education authorities would pocket the proceeds by docking fund allocations. "We get round this difficulty by acting with other authorities outside the law. We have set up our own limited company, Nelco. I will not pretend there are no difficulties. Profits must not come back as money but as equipment, conference fees, travel for research and so on."

During the meeting Dr N. Segal, a management consultant, said the responsibility for the success of the scheme linking higher education, industry and commerce lay with the government, not the universities.

Professor Gerry Fowler, director of the North East London Polytechnic, said that although the government proposals were supposed to overcome such difficulties there was a danger that local education authorities would pocket the proceeds by docking fund allocations. "We get round this difficulty by acting with other authorities outside the law. We have set up our own limited company, Nelco. I will not pretend there are no difficulties. Profits must not come back as money but as equipment, conference fees, travel for research and so on."

"In that way a local authority cannot recoup profits - but it still does not mean that it will not reduce pool allocations to reflect those." If the government was serious about its intentions, he said, it needed to look at the political imperatives and come up with some sensible proposals.

After the meeting Dr N. Segal, a management consultant, said the responsibility for the success of the scheme linking higher education, industry and commerce lay with the government, not the universities.

Professor Gerry Fowler, director of the North East London Polytechnic, said that although the government proposals were supposed to overcome such difficulties there was a danger that local education authorities would pocket the proceeds by docking fund allocations. "We get round this difficulty by acting with other authorities outside the law. We have set up our own limited company, Nelco. I will not pretend there are no difficulties. Profits must not come back as money but as equipment, conference fees, travel for research and so on."

"In that way a local authority cannot recoup profits - but it still does not mean that it will not reduce pool allocations to reflect those." If the government was serious about its intentions, he said, it needed to look at the political imperatives and come up with some sensible proposals.

After the meeting Dr N. Segal, a management consultant, said the responsibility for the success of the scheme linking higher education, industry and commerce lay with the government, not the universities.

Professor Gerry Fowler, director of the North East London Polytechnic, said that although the government proposals were supposed to overcome such difficulties there was a danger that local education authorities would pocket the proceeds by docking fund allocations. "We get round this difficulty by acting with other authorities outside the law. We have set up our own limited company, Nelco. I will not pretend there are no difficulties. Profits must not come back as money but as equipment, conference fees, travel for research and so on."

"In that way a local authority cannot recoup profits - but it still does not mean that it will not reduce pool allocations to reflect those." If the government was serious about its intentions, he said, it needed to look at the political imperatives and come up with some sensible proposals.

After the meeting Dr N. Segal, a management consultant, said the responsibility for the success of the scheme linking higher education, industry and commerce lay with the government, not the universities.

Professor Gerry Fowler, director of the North East London Polytechnic, said that although the government proposals were supposed to overcome such difficulties there was a danger that local education authorities would pocket the proceeds by docking fund allocations. "We get round this difficulty by acting with other authorities outside the law. We have set up our own limited company, Nelco. I will not pretend there are no difficulties. Profits must not come back as money but as equipment, conference fees, travel for research and so on."

"In that way a local authority cannot recoup profits - but it still does not mean that it will not reduce pool allocations to reflect those." If the government was serious about its intentions, he said, it needed to look at the political imperatives and come up with some sensible proposals.

After the meeting Dr N. Segal, a management consultant, said the responsibility for the success of the scheme linking higher education, industry and commerce lay with the government, not the universities.

Professor Gerry Fowler, director of the North East London Polytechnic, said that although the government proposals were supposed to overcome such difficulties there was a danger that local education authorities would pocket the proceeds by docking fund allocations. "We get round this difficulty by acting with other authorities outside the law. We have set up our own limited company, Nelco. I will not pretend there are no difficulties. Profits must not come back as money but as equipment, conference fees, travel for research and so on."

"In that way a local authority cannot recoup profits - but it still does not mean that it will not reduce pool allocations to reflect those." If the government was serious about its intentions, he said, it needed to look at the political imperatives and come up with some sensible proposals.

After the meeting Dr N. Segal, a management consultant, said the responsibility for the success of the scheme linking higher education, industry and commerce lay with the government, not the universities.

Professor Gerry Fowler, director of the North East London Polytechnic, said that although the government proposals were supposed to overcome such difficulties there was a danger that local education authorities would pocket the proceeds by docking fund allocations. "We get round this difficulty by acting with other authorities outside the law. We have set up our own limited company, Nelco. I will not pretend there are no difficulties. Profits must not come back as money but as equipment, conference fees, travel for research and so on."

UGC puts pressure on Welsh merger

by Ngalo Crequer

The merger between University College, Cardiff and the University of Wales Institute of Science and Technology is on again, after pressure from the University Grants Committee.

The committee has told the two colleges that a commitment to total merger would be necessary before any new buildings required for the two engineering schools reached tender stage, "otherwise the UGC could find itself funding buildings which had no assured purpose."

In February the UGC said that unless the UWIST school of engineering and the UGC faculty of applied science merged, there would be no more money for the subject.

In a new letter, Sir Peter Swinnerton Dyer, chairman of the UGC, says that with regard to a total merger of the two institutions, this need not come about for another four or five years, until the new engineering building was ready for occupation.

He also suggests that the presence of an independent chairman might be beneficial to resolve some of the differences which would doubtless arise during discussions.

The merger last broke down last year mainly because UWIST felt it would be taken over by UGC, and was also unhappy about UGC's financial state. The UGC view is that the engineering merger could only come about by complete merger of the two institutions, and they want discussions to start immediately.

They have told the UGC that their financial problems should not deter UWIST (in March UGC were expecting a deficit for 1983/84 of more than £1m), that they have taken steps to rectify the situation and should balance their books in three years' time.

An extraordinary meeting of the UWIST development committee referring to the correspondence between the colleges, and the view that a merger on mutually acceptable terms would be welcome, made four recommendations to council.

● Steps be taken to re-open merger discussions, subject to the acceptance of an independent chairman nominating a committee to investigate the merger.

● Before formal commitment to merger, UGC should have implemented steps to rectify their present financial problems;

● A principal-designate for the new integrated college should be appointed by a joint UC/WIST selection committee;

● Consideration should be given to the similar appointment of senior administrative officers for the new college.

A small committee has also been established between the two institutions to plot the merger of the engineering schools, to achieve a single strong base for engineering in Cardiff.

Although much of the centre's function will be practical, emphasis will also be placed on fostering academic links. Visiting Chinese lecturers have already been to Wales and the centre will strengthen these ties.

Chinese students will be encouraged to come to Cardiff to read for higher degrees, and it is anticipated that joint research projects will develop between Cardiff and Xiamen University. Discussions are already under way about joint projects in metallurgy.

The Chinese contribution to the centre will be the provision of staff. Day-to-day running will be left to University College. Academics from Cardiff will form the organization committee, and the department of education will provide the necessary administrative help.

"We'll be inviting the local Chinese community to take part in the activity," said Professor Taylor, who is the project director. "It'll give them a chance to experience their homeland's culture in Britain. We also hope that they'll join in the Mandarin language classes. It's the only form of written Chinese - their Cantonese dialect hasn't been recorded. If they want to read Chinese they must understand Mandarin."

At this stage the British were the tutors and the Chinese students. But this role changed dramatically last month. Two Chinese academics arrived in Cardiff to work in the study centre, their salaries paid by the Chinese government.

Professor Andrew Taylor of the university's education department said: "We knew they had so much to teach us. 'So we were delighted when the embassy approached us about the centre.'"

The present emphasis on language teaching will be expanded. As well as teaching English UGC will run courses in Mandarin Chinese. Engaging business interest is essential to ensure the project's success since the centre will be largely self-financing, and industrialists are expected to be attracted because of China's huge potential as an export market.

Teachers may also attend to gain an insight into Chinese culture. Teacher unemployment here could make China an attractive proposition: there are currently 400 vacancies for English teachers in Chinese universities, although overseas teachers are paid on Chinese rates.

The Cardiff project will be a useful information centre for British citizens considering living and working in China. The Chinese will benefit from having Western expertise channelled to where the need is greatest, while industrialists will be helped in making useful contacts. The added advantage is that the centre's staff have first hand experience of Chinese working practices.

At this stage the British were the tutors and the Chinese students. But this role changed dramatically last month. Two Chinese academics arrived in Cardiff to work in the study centre, their salaries paid by the Chinese government.

Professor Andrew Taylor of the university's education department said: "We knew they had so much to teach us. 'So we were delighted when the embassy approached us about the centre.'"

The present emphasis on language teaching will be expanded. As well as teaching English UGC will run courses in Mandarin Chinese. Engaging business interest is essential to ensure the project's success since the centre will be largely self-financing, and industrialists are expected to be attracted because of China's huge potential as an export market.

During the meeting Dr N. Segal, a management consultant, said the responsibility for the success of the scheme linking higher education, industry and commerce lay with the government, not the universities.

Professor Gerry Fowler, director of the North East London Polytechnic, said that although the government proposals were supposed to overcome such difficulties there was a danger that local education authorities would pocket the proceeds by docking fund allocations. "We get round this difficulty by acting with other authorities outside the law. We have set up our own limited company, Nelco. I will not pretend there are no difficulties. Profits must not come back as money but as equipment, conference fees, travel for research and so on."

"In that way a local authority cannot recoup profits - but it still does not mean that it will not reduce pool allocations to reflect those." If the government was serious about its intentions, he said, it needed to look at the political imperatives and come up with some sensible proposals.

After the meeting Dr N. Segal, a management consultant, said the responsibility for the success of the scheme linking higher education, industry and commerce lay with the government, not the universities.

Professor Gerry Fowler, director of the North East London Polytechnic, said that although the government proposals were supposed to overcome such difficulties there was a danger that local education authorities would pocket the proceeds by docking fund allocations. "We get round this difficulty by acting with other authorities outside the law. We have set up our own limited company, Nelco. I will not pretend there are no difficulties. Profits must not come back as money but as equipment, conference fees, travel for research and so on."

"In that way a local authority cannot recoup profits - but it still does not mean that it will not reduce pool allocations to reflect those." If the government was serious about its intentions, he said, it needed to look at the political imperatives and come up with some sensible proposals.

After the meeting Dr N. Segal, a management consultant, said the responsibility for the success of the scheme linking higher education, industry and commerce lay with the government, not the universities.

Professor Gerry Fowler, director of the North East London Polytechnic, said that although the government proposals were supposed to overcome such difficulties there was a danger that local education authorities would pocket the proceeds by docking fund allocations. "We get round this difficulty by acting with other authorities outside the law. We have set up our own limited company, Nelco. I will not pretend there are no difficulties. Profits must not come back as money but as equipment, conference fees, travel for research and so on."

"In that way a local authority cannot recoup profits - but it still does not mean that it will not reduce pool allocations to reflect those." If the government was serious about its intentions, he said, it needed to look at the political imperatives and come up with some sensible proposals.

After the meeting Dr N. Segal, a management consultant, said the responsibility for the success of the scheme linking higher education, industry and commerce lay with the government, not the universities.

Professor Gerry Fowler, director of the North East London Polytechnic, said that although the government proposals were supposed to overcome such difficulties there was a danger that local education authorities would pocket the proceeds by docking fund allocations. "We get round this difficulty by acting with other authorities outside the law. We have set up our own limited company, Nelco. I will not pretend there are no difficulties. Profits must not come back as money but as equipment, conference fees, travel for research and so on."

"In that way a local authority cannot recoup profits - but it still does not mean that it will not reduce pool allocations to reflect those." If the government was serious about its intentions, he said, it needed to look at the political imperatives and come up with some sensible proposals.

After the meeting Dr N. Segal, a management consultant, said the responsibility for the success of the scheme linking higher education, industry and commerce lay with the government, not the universities.

Professor Gerry Fowler, director of the North East London Polytechnic, said that although the government proposals were supposed to overcome such difficulties there was a danger that local education authorities would pocket the proceeds by docking fund allocations. "We get round this difficulty by acting with other authorities outside the law. We have set up our own limited company, Nelco. I will not pretend there are no difficulties. Profits must not come back as money but as equipment, conference fees, travel for research and so on."

"In that way a local authority cannot recoup profits - but it still does not mean that it will not reduce pool allocations to reflect those." If the government was serious about its intentions, he said, it needed to look at the political imperatives and come up with some sensible proposals.

After the meeting Dr N. Segal, a management consultant, said the responsibility for the success of the scheme linking higher education, industry and commerce lay with the government, not the universities.

Professor Gerry Fowler, director of the North East London Polytechnic, said that although the government proposals were supposed to overcome such difficulties there was a danger that local education authorities would pocket the proceeds by docking fund allocations. "We get round this difficulty by acting with other authorities outside the law. We have set up our own limited company, Nelco. I will not pretend there are no difficulties. Profits must not come back as money but as equipment, conference fees, travel for research and so on."

During the meeting Dr N. Segal, a management consultant, said the responsibility for the success of the scheme linking higher education, industry and commerce lay with the government, not the universities.

Professor Gerry Fowler, director of the North East London Polytechnic, said that although the government proposals were supposed to overcome such difficulties there was a danger that local education authorities would pocket the proceeds by docking fund allocations. "We get round this difficulty by acting with other authorities outside the law. We have set up our own limited company, Nelco. I will not pretend there are no difficulties. Profits must not come back as money but as equipment, conference fees, travel for research and so on."

"In that way a local authority cannot recoup profits - but it still does not mean that it will not reduce pool allocations to reflect those." If the government was serious about its intentions, he said, it needed to look at the political imperatives and come up with some sensible proposals.

After the meeting Dr N. Segal, a management consultant, said the responsibility for the success of the scheme linking higher education, industry and commerce lay with the government, not the universities.

Professor Gerry Fowler, director of the North East London Polytechnic, said that although the government proposals were supposed to overcome such difficulties there was a danger that local education authorities would pocket the proceeds by docking fund allocations. "We get round this difficulty by acting with other authorities outside the law. We have set up our own limited company, Nelco. I will not pretend there are no difficulties. Profits must not come back as money but as equipment, conference fees, travel for research and so on."

"In that way a local authority cannot recoup profits - but it still does not mean that it will not reduce pool allocations to reflect those." If the government was serious about its intentions, he said, it needed to look at the political imperatives and come up with some sensible proposals.

After the meeting Dr N. Segal, a management consultant, said the responsibility for the success of the scheme linking higher education, industry and commerce lay with the government, not the universities.

Professor Gerry Fowler, director of the North East London Polytechnic, said that although the government proposals were supposed to overcome such difficulties there was a danger that local education authorities would pocket the proceeds by docking fund allocations. "We get round this difficulty by acting with other authorities outside the law. We have set up our own limited company, Nelco. I will not pretend there are no difficulties. Profits must not come back as money but as equipment, conference fees, travel for research and so on."</

overseas news

Jaruzelski woos academics

General Wojciech Jaruzelski has offered the Polish Academy of Sciences a stick-and-carrot package for cooperation with the Communist Party and government authorities.

Addressing an eve-of-May-Day meeting at the academy he called for greater political commitment on the part of scholars, including a new approach to the teaching of history, law and economics, in order to overcome prevailing "myths divorced from reality and historical truth".

But he also promised increased spending on research from 1986 onwards, increased academic cooperation with the West and a chance for leading scholars in the humanities, social and exact sciences to serve as "tutors" to the government. They would provide "information, prognoses and proposals" and also give regular lectures to the political and state leadership.

In his capacity as party leader, Jaruzelski has little cause to be pleased with the academy, which last December declined to elect the Party-backed candidate, Dr Leonard Sosnowski, as its new president. As prime minister, however, he needs the help of the

scholars, particularly in the social and technical sciences, in putting through his programme of economic reforms.

The academy, he flattered them, had a major role to play in helping the government to "make corrections" to the reform on the basis of experience gathered in implementing it. The scholars, moreover, were expected, he said, to help form the people's mentality to face the new technological age.

Although General Jaruzelski's government faces a general election in June, the chances of his not being returned to power are negligible. The main threat he faces is a low turnout, a form of protest which the authorities publicly dismiss as wishful thinking on the part of "subversive centres abroad". But this is believed to have been a major factor in their decision to postpone the elections from March until June.

Nevertheless, Jaruzelski's speech had something of the air of a Western-style election manifesto. In addition to the promise of increased spending on science and learning, including restoration of subscriptions to foreign journals, he clearly made an effort to

allay fears in the academy about forthcoming legislation that will revise the academy statutes and defining the role of science and research in the Polish economy.

Analysis of the general's reassurances reveals little definite commitment. He sympathized with the academy's "understandable" focus on fundamental research for which it receives modest block funding. But he went on to note that basic sciences were foundations for building practical solutions, and suggested, as before, that it was the research projects which the government saw as related to the direct needs of the economy which would enjoy priority status.

He sympathized again with the scholars over recent cutbacks in research spending. But while promising them "tangible increases" during the 1986-1990 five year plan, he took the academicians to task for failing to use effectively the limited money and equipment which they have. "The discipline of the research process leaves much to be desired," he warned.

Universities rule out positive discrimination

from Geoff Maslen
MELBOURNE

The all-male Australian Vice-Chancellors Committee has released a policy paper on women in universities which expresses opposition to the idea of giving preference to them in senior academic appointments.

According to the vice chancellors, university appointments should continue to be made on the basis of merit, although their paper says efforts should be made to eliminate practices which disadvantage women in selection and promotion.

The generally conservative line taken in the policy paper was attacked by some education groups. A spokeswoman said female academics were very disappointed with the vice chancellors' comments. "We do not think that the issue is just a matter of sitting back and waiting for women to catch up in the academic stakes as the vice-chancellors suggest," she said. The policy paper overlooked the fact that "merit" was a highly political, very elusive and very subjective concept and one which sometimes tended to work against women.

In their paper, the vice chancellors state that Australian universities are firmly committed to the principle of non-discrimination. Universities, consistent with this principle, believed in providing equal employment opportunities for both women and men, "thereby drawing on the overall pool of intellectual talent which exists in Australian society", the paper states.

But the paper then details the proportion of men and women. Only 17 per cent of women are employed in teaching and research positions in Australian universities and the imbalance is far greater at the senior than at the junior level. While women make up 43 per cent of academics holding

tutor positions, only 2 per cent are professors.

"However, it must be acknowledged that possession of a higher degree is almost essential to be appointed to tenured academic post," the paper states. "In 1982/83, women received 9 per cent of doctorates awarded, 12 per cent of masters degrees and 14 per cent of bachelors degrees but the proportion proceeded to higher degrees was much lower in earlier years, and now even fewer women apply for honorary academic positions."

On the issue of appointments, the vice chancellors say that every vacancy should be defined and advertised in terms that do not favour or inadvertently discriminate on selection and appointment.

While adhering to the principle that the best person should be appointed, the AVCC says it supports steps to reduce the imbalance. To this end it is working with the Federation of Australian University Staff Associations to provide national guidelines on equal opportunities for employment.

But a spokeswoman for the FAU said the association would like universities taking more active steps to attract women. Often women do push themselves forward to apply for positions and they should be encouraged to do so. She said women were the tutor and senior tutor levels, often extremely well-qualified but because of high teaching loads they have been unable to publish much.

The patronage system of appointments under which positions at junior or temporary level were filled without being advertised was under everybody. Women did not have same chance as men to make selection through the pub, the staff club, playing sport, she said.

Senator bids to introduce loans for health studies

from E. Patrick McQuinn
CAMBRIDGE

Legislation has been introduced in the United States senate that would provide loans and other federally-subsidized aid for students in allied health fields.

Currently only future doctors may apply to the programme called health education assistance loans. An estimated 19,000 students were enrolled in post-baccalaureate allied health programmes during the 1979/80 academic year, according to the National Advisory Council on Health Professions Education.

The bill was introduced by Senator Orrin Hatch, a Republican from Utah who chairs the labour and human resources committee. Meanwhile the health subcommittee of the House of Representatives, which has not yet introduced any of its own legislation, heard testimony from the Reagan government and private lobby groups backing a proposal to merge the more than 30 separate health staffing programmes into one agency for health professions education.

Funding proposed by Mr Hatch to authorize and strengthen the existing health professions budget would be more than \$134m, which is about \$60m more than President Reagan has requested in his own fiscal package. Recognition of the allied health fields in the Hatch legislation is considered significant, say sponsors, because the employment of less costly professionals in the future will yield great savings to the overall health budget for the nation.

In testimony for the bill, the president of the American Society of Allied Health Professions wrote that to look his case to the US district court, but for lying about it after he was charged with cheating in his first-year examinations. The university decided to expel him, not for cheating, said attorneys after Mr Corbett lost his case to the university circuit court of appeals.

The appeals court decided that the cheating and the lying were not interrelated and thus the university move was based on a broad academic standards.

After losing the case, the university sought redress before the US circuit court of appeals.

Sweden in bid for space university

from Donald Fields

HELSINKI
Municipal officials at Kiruna, northern Sweden, are optimistic that their Arctic community, favoured by clear skies and frequent displays of the Northern Lights, could form the site for Europe's first space university, jointly financed by the public sector and private enterprise.

Government experts in Stockholm are cautious about the scheme, for which no allocations have yet been earmarked in the higher education and research budgets. But a recent visit by the Kiruna, which is located 250 miles northwest of Sweden's northernmost university at Umea, showed an impressive degree of academic research work already taking place there under the aegis of the rocket-firing Esrange and the Kiruna Geophysical Institute.

"Space is our place" is the motto of the state-owned Swedish Space Corporation, which runs the Esrange, a rocket launching site, the British Skylark 7, and a number of altitudes reaching 500 kilometres. Since 1966 researchers from all over the world have been involved in the firing of 284 such rockets. Between 50 and 60 of them have been Swedish but the two superpowers, six other countries and the European Space Agency also act as clients.

Germans urged to compete



Heinz Riesenhuber, research minister
from Barbara von Ow

MUNICH
West Germany's 13 big state-funded research institutes must shift the emphasis of their work to fields where Germany is most threatened by international competition, research minister Heinz Riesenhuber has urged.

Submitting a report to the government last week, Mr Riesenhuber also called for closer cooperation between the research institutes, industry and the universities.

Big research institutes, which employ more than 20,000 people, had to develop faster and more efficient methods of channelling their findings into areas of practical application, the minister noted. While classic research fields such as nuclear technology were decreasing, it was vital to expand research in microelectronics, biotechnology as well as the health and environment sectors. Since financial means were scarce, this could only be achieved by a restructuring of the research areas, he added.

The big state institutes will receive a total of 1.8 billion DM in government funds this year, a quarter of the entire research budget. Scientists working at the institutes should be encouraged more to work in industry, at least for a period of their professional life, Mr Riesenhuber said. At present only some 80 scientists from the big institutes changed over to industry per year, he complained.

The Bonn and Lander governments had taken measures to expand the staff of the research institutes to relieve scientists of some of their bureaucratic duties, Mr Riesenhuber underlined. Meanwhile, big research projects would in future be subject to more substantial contributions from industry. Most important among such projects were energy systems, space labs and nuclear reprocessing schemes.

For the layman, it is surprising to stumble on all this activity - partly because, at 68 degrees north, it is so remote from the main concentrations of scientists, partly because it forms such a marked contrast with the recession-haunted pursuit of iron-mining upon which Kiruna was built. But the environment is ideal.

The Esrange is especially proud of its facilities, dating from 1978, for processing remote-sensing satellite data, applying ingeniously for the mapping and monitoring of the world's natural resources. Visitors are invited to gather round screens and watch the view discerned by satellites orbiting the earth. Kiruna also renders assistance to several countries, including Britain, in a maritime surveillance system used in coastal guard work.

The Swedish Space Corporation, injecting £26m a year into the Esrange's running costs, is also shouldering the main responsibility for a telecommunications satellite, Tele-X, which is also backed by Norway and Finland. To be launched in 1986, Tele-X will relay radio and TV programmes originating in each of these countries throughout the entire region. But it marks a comeback from more ambitious all-Nordic satellite schemes, partly because of Denmark's withdrawal, and some influential critics believe all-Nordic programme production would be a more fruitful

pursuit than all-Nordic dissemination.

Evidence of what inter-Nordic scientific collaboration can achieve in a particular field of research is presented by the Kiruna Geophysical Institute (KGI), which is interlocked with a transmitter at Tromsø (Norway) and UHF reception facilities at Sodankylä (Finland). Experts at three other centres in Sweden itself are also involved.

"Our concern is the magnetosphere, its impact on our understanding of the universe, and the role of human beings within it," said Professor Bengt Hultqvist, the KGI's director. "Fifteen years is a typical lifespan for a research project using satellites, so there are different people at the start and the end, and considerable changes in university back-up staff."

The accent on space plasma physics at the KGI has been on experiments and observations, but a small theoretical research group also exists among the 30 on-site personnel. Optical instruments and spectrometers (borne by sounding rockets and satellites) are used to probe the interaction of hot magnetospheric plasma with the earth's upper atmosphere.

According to a KGI handout, important advances have been made in the last decade though many factors are still not understood: "Our results have confirmed the importance of a magnetic-field-aligned electric field ... (and) that the accelerated elec-

trons in arcs have much lower temperature and frequently higher density than are found in the plasma sheet, indicating the magnetospheric boundary layers as source."

The significance of the KGI, which was propelled into existence by the Swedish Academy of Sciences as the first Soviet sputnik was prepared for its epoch-making launch in 1957, extends far beyond Scandinavia. Global projects in which it has immersed itself include the international magnetospheric study, with the forthcoming middle atmosphere programme likely to play a similar role. Among foreign universities with which it is connected is Leicester.

Professor Hultqvist is optimistic about the "pearls" emerging from basic research, even on a modest budget mocked by the escalating costs incurred on the principal space projects, and mildly optimistic about the multiplier effect on employment if an electronics group grasps the Kiruna nettle. "Our future is assured," he reflected. "This is the era of space research, or technical breakthroughs that grant us the opportunity to move into new areas."

The words may not, as yet, match the grand vision of a space university - but as Kiruna mounts efforts to encounter Halley's comet two years hence northerly climes are proving their advantages.

'Anti-radical' group formed

from Carolyn Dempster
JOHANNESBURG
A new conservative student union has been launched this week by conservative groups at three English-medium liberal universities.

The stated aim of the National Students Federation is to "oppose the authoritarian domination of South African campuses by radicals".

The union comprises some 700 students drawn from the Students Moderate Alliance based on the campus of the University of the Witwatersrand, the Moderate Students Movement at the University of Cape Town and the Students Action Front which was formed by conservatives at the University of Natal.

All three universities are affiliated to the National Union of South African Students which has traditionally articulated the liberal views of English-speaking South African students.

Although the new federation's president, Mr Russel Crystal of the SMA, has claimed the union is apolitical and "definitely not right-wing" he sees the union operating in opposition to NUSAS. Other aims of the NSF are to promote patriotism, support the free market system in South Africa, oppose the forces of international collectivism and oppose the use of violence to achieve political ends.

Response by NUSAS to the formation of the new union is tinged with deep suspicion. NUSAS president Kate Phillips pointed to links between the conservative student organizations and the national party and the security police as something students should be wary of.

It has also been mooted that the formation of the federation is the start of a concerted campaign to pressure universities to disaffiliate from NUSAS and weaken the student body's foundations.

Lebowa, one of South Africa's impoverished black homelands has announced plans for a R9m new medical school and hospital.

Building is scheduled to start in July and the centre is due to be sited two kilometres from the black university of the north. If the university is unable to find sufficient qualified medical staff locally, it will recruit overseas tutors.

Teaching loads increase 'has meant decline in quality'

from Mark Gerson
TORONTO

Quebec's Council of Colleges has echoed community college faculty's complaints that teaching loads have been planned increases in teaching loads suspended.

The council advises education minister Yves Bérubé on community college policy.

The increase in faculty work loads, scheduled for September, is part of a three year contract imposed on college teachers by the provincial government last year following a bitter labour dispute. The contract calls for teaching loads to be increased through an annual reduction in teaching staff.

According to teachers, the 7 per cent increase in their work load in 1983/84 has already led to a deterioration in the quality of education at the public colleges. The 3.5 per cent increase planned for the fall will only make things worse, they said.

Motivated by similar concerns, the Council of Colleges has insisted that a thorough study of teaching loads be undertaken before any further increases are implemented. "Many of the conditions necessary for equality in education are in peril," council president Joanne Blackburn said in a telegram to Bérubé.

Faculty have blamed higher college drop out rates directly on the work load provisions of their contracts. Higher student teacher ratios have been particularly hard on students in difficulty, they said, because teachers are faced with larger classes and have less time for individual student problems.

The education minister has already agreed to renegotiate the working conditions of public school teachers. But he has yet to reply to the requests from the college level groups.

planned for the fall will only make things worse, they said.

Motivated by similar concerns, the Council of Colleges has insisted that a thorough study of teaching loads be undertaken before any further increases are implemented. "Many of the conditions necessary for equality in education are in peril," council president Joanne Blackburn said in a telegram to Bérubé.

Faculty have blamed higher college drop out rates directly on the work load provisions of their contracts. Higher student teacher ratios have been particularly hard on students in difficulty, they said, because teachers are faced with larger classes and have less time for individual student problems.

The education minister has already agreed to renegotiate the working conditions of public school teachers. But he has yet to reply to the requests from the college level groups.

Israelis hold Arab lecturer

from Benny Morris

JERUSALEM

An Arab lecturer from Haifa University was arrested by the security forces for 24 hours, apparently because of a lecture he had given on the education system of Israel's Arab minority.

Dr Sami Mari, of the university's school of education, was released by the police only after the forceful intervention of Knesset member Shulamit Aloni, who heads the citizens rights movement (an affiliate of the main Labour Opposition party).

Mari was the first arrest of a university teacher in Israel within memory. Mari was not very responsive to questions on his arrest by reporters. He said he felt "very alienated" about the matter and might have more to say later.

He said he was questioned for much of the 24-hour detention period, mostly about his educational work, and his research into Palestinian cultural history.

A week before his detention, Dr Mari attended a meeting of the Jewish Arab Peace Council in Kibbutz Shefayim. During the meeting, which focused on educational subjects, he told the participants that Israeli education was essentially Jewish and the curriculum in the Arab minority schools was based on "what's good for the Jews". Mr Aloni linked Mari's arrest to this statement, which was quoted in the press.

Israel's 600,000-strong Arab minority, who mostly live separately from the Jewish majority in their own villages and towns, has a separate education system. The language of instruction in the Arab minority schools is Arabic, and the pupils are taught Arab history and culture as well as Jewish and Israeli history and culture, with an emphasis, in terms of teaching hours, on the latter.

While in detention, Mari was also interrogated about who he met during trips abroad. (Israeli law forbids Israelis - Arabs or Jews - from contacts with representatives of hostile states or organizations, such as the Palestine Liberation Organization.)

Knesset member Aloni said that the authorities' interest in Israeli contacts abroad is legitimate, but they should not arrest those they wish to question, and after midnight. They could simply invite them in to answer questions, if there were suspicions.

Henry VIII's first marriage certificate

If it were on Goatskin Parchment Archival Paper, it would just be coming to the end of its guaranteed life. Which is more than can be said about the marriage. Goatskin Parchment Paper has a guaranteed life of over 500 years.

For certificates, legal documents, deeds and other archival material. Send for sample certificate now or ask your printer for details.



Goatskin Parchment. The Survivor.

Wiggins Teape Fine Paper Mills
Wiggins Teape Fine Paper Mills, P.O. Box 88
Cannock, Staffs, ST2 8JH, England
Telephone Cannock (0226) 20262

WIGGINS
TEAPE

Rumours cause unrest

Final-year pupils at Algerian secondary schools who cause "disturbances of public security" or who create confusion by spreading rumours that university admissions are to be cut face expulsion and possible arrest and trial under new emergency measures. Parents and guardians have been warned that they must "bear their full responsibilities" to avoid the consequences of their children's behaviour.

Unrest has been growing for some time among this year's batch of school-leavers, who are now preparing for their (French-style) baccalaureate examination on which university entrance depends. There are widespread rumours that this year 5 per cent of candidates will be allowed to pass.

Simultaneously with the new measure, minister of education Abdelhak Beraud went on Algerian television to try to defuse the situation. The government, therefore, would have no objection to an 80 per cent pass rate.

Heat is on to save college

The president of the United States is intervening on behalf of the beleaguered Fisk University, the predominantly black institution where financial troubles saw enrolments drop from 1,200 to 700 within a decade. "Fisk is one of the nation's oldest and most revered black universities. Last autumn it had its heat turned off because of unpaid bills and after negotiating a pay-back schedule, the university president resigned."

The Reagan government has set up a 17-member task force to review the Fisk case, not only to explore rescue options but also to use it as a case

study for other minority institutions. The panel is hoping to work out common solutions to problems that minority colleges have in common. The committee is composed of officials within the federal education ministry, college and university presidents, and private foundations.

Oddly enough, application at Fisk continues to run high. But students enrol at other colleges because of better financial offerings, says Fisk's president, Mr Robert Satcher. "We'd like to think there are no bills like that money would not be paid," he said.

The particulars surfaced at the medical school of Creighton University in 1982 when Mr Salvatore Conroy was charged with cheating in his first-year examinations. The university decided to expel him, not for cheating, said attorneys after Mr Corbett lost his case to the university circuit court of appeals.

The appeals court decided that the cheating and the lying were not interrelated and thus the university move was based on a broad academic standards.

Court rules in favour of student in cheating case

In yet another case boiling down to simple contract law, a federal appeals court has ruled that a university cannot send down students charged with cheating - and then covering their tracks - until they receive a full hearing on the matter.

After losing the case, the university sought redress before the US circuit court of appeals.

The appeals court decided that the cheating and the lying were not interrelated and thus the university move was based on a broad academic standards.

After losing the case, the university sought redress before the US circuit court of appeals.

1. *Journal of the American Medical Association*, 1997; 277: 1033-1037.



The survey team (left to right): Jean Alcock, coordinator; Elizabeth Mackay, who is confined to a wheelchair; Anne McManus, who has motor disability; and Christopher Crockett, who is partially sighted.

Wheels within wheels

John Jackson couldn't attend the Association of University Teachers' council session on discrimination. Dr Jackson, president of Strathclyde University's AUT, found the hall didn't have access for his wheelchair.

"Discrimination isn't about the disabled any more, it's synonymous with women," he says. "I don't know what group's next - vegetarians against the bomb?"

The Warnock report in the late 1970s and the year of the disabled in 1981 have, he feels, merely resulted in a general warm glow of self-congratulation. "There has been the odd extra sunshine bus to take grannies to the beach, but the ability to do things hasn't changed in any way whatsoever."

"How many new buildings have been opened in British universities since Warnock? And how many of these are accessible? I've been in lots of new ones where you can't get in with a wheelchair except through the bins." Dr Jackson is a former Scottish organizer of the National Bureau for Handicapped Students, where he tried to get policies changed and show that disabled people could go through higher education like anyone else, as well as proselytizing disabled people capable of higher education. "But we ended up fighting case by case."

The crunch came when Dr Jackson visited the Netherlands and saw the work of the Government-funded Dutch Bureau for Handicapped Students which he believes is probably the best organized in Europe. It offers a full-time professional counselling service to all handicapped young people and tries as far as possible to maintain contact with each student until he or she is ready for employment, says Dr Jackson.

"A big failure of our system is that too many people are involved and many students become confused because of the lack of a fixed contact. What money is available in Britain is being dissipated on our fractionalized inefficient service."

The Dutch bureau is building up a data bank enabling them to give better advice: being able to tell a student, for example, that five students with a particular disability took a particular course, and four have found jobs. They can also give advice on housing, teaching aids and self-help groups.

"Their people are well known in schools and universities, and because of their professionalism, inspire confidence in both educators and educated," Dr Jackson says.

"When I came back it struck me we should really stop this amateurishness - not that I'm criticizing the people involved - and have professional, full-time people."

He proposed to the NBHS executive committee that they should make funding from industry and charities to set up such an organization. The vote, he recalls, "wasn't even close," and he resigned.

But if nothing is happening nationally, initiatives must be taken locally. Dr Jackson agrees, and he has particular praise for a survey team at Strathclyde University which is investigating the physical and educational problems confronting disabled students.

The team was set up through the Student Advisory Service and is being

A Strathclyde University team is investigating problems facing disabled students. Olga Wojtas reports

funded by the Manpower Services Commission, the university and a number of charities. Three of the team of four are themselves disabled: Christopher Crockett, a Glasgow University history graduate, is partially sighted; Elizabeth Mackay, who holds an advanced diploma in computer science from Bell College, is confined to a wheelchair; and Anne McManus, who graduated in sociology from Strathclyde last year, has motor disability.

The team coordinator, Jean Alcock, confesses: "When we first came, to be honest, we assumed we were a sop to everyone's conscience. But we think things are moving."

The team, which began work in December, has just produced an interim report, surveying facilities on campus for disabled students. Few universities can be further than Strathclyde from the ideal single-story institution on a level campus. Strathclyde is built on a series of steep hills in the centre of Glasgow, with a number of buildings dating from the turn of the century.

The report contains a series of extremely pragmatic recommendations, pointing out where there should be toilets for the disabled, where ramps are needed, and where steps can be marked with yellow paint to help the partially sighted. It gives the cost of adaptations, the most expensive being £500, and lists potential sources of finance.

Strathclyde's policy is to make adaptations to suit individual students, when necessary. The team recognizes it is impractical to suggest extensive and costly alterations throughout the campus, and has based its present proposals on the needs of disabled students already in Strathclyde.

But its final report is likely to suggest that any new buildings should have built-in provision for the disabled. The team has been disappointed by Strathclyde's new residence, Murray Hall, which opened last week. "There is no disabled lavatory, a very narrow fire exit, no lift, and steps at the main entrance," says Christopher Crockett. "We've been told adaptations will be made if a disabled person wants a place," says Jean Alcock. "But it would have been much simpler to do them now."

Strathclyde already has a cassette for disabled applicants, informing them of agencies within the university which can help them, and advising them to investigate matters such as grants and transport. The team now intends to produce an access map of the campus on tape, in braille and a

booklet, which will include a guide to where courses are held.

"We want to avoid the problem of a disabled student discovering to his horror on his first day that he has a class at one end of the campus at 10 and another at the other end at 11," says William Paton, Strathclyde's director of Student Advisory Services.

The team's final report is likely to be finished in June and will cover the issues of admission procedures, study problems, sources of finance and assistance, safety procedures and attitudes towards disability. "A lot of the negative attitudes come from ignorance and we want to cut out the preconceptions," says Jean Alcock.

"We're not trying to demand the right for disabled students to do anything," adds Mr Crockett. "And we're not greatly worried if a department says a student can't do something, as long as they've thought it out and can say why."

The teams have found that, by and large, science and engineering departments fear there will be problems when these are actually surmountable, while arts and social studies reckon the problems will be minimal.

But for a visually handicapped student, lengthy reading lists, taking notes and writing essays can be more daunting than practical work. Jean Alcock believes that new technology will be of paramount importance to disabled students, and Strathclyde aims to establish a resource centre for study aid for the disabled.

Dr Alex Main, Strathclyde's adviser in educational methods, hopes universities are moving towards computer assisted learning, taking the emphasis off more formal instruction.

"For some handicapped students, writing and rewriting an essay is a long, physically agonizing process and they can benefit from a word processor."

"There are very simple devices which can produce raised maps, diagrams and graphs for blind students which make communication in quantitative subjects much easier. There are little sound recorders where students can almost whisper their own notes during lectures, and use a sleep-on to signal important points as someone writing might underline. In many instances these aren't very costly and can be met out of a disabled allowance."

Dr Main adds that universities could also help by introducing a more flexible system, for example, part time degrees and this would benefit all students.

"Different students learn in different ways at different rates, and many have times when they are ill, or have a crisis or domestic commitments. With the ways universities are organized at the moment, if you miss substantial periods of training your pattern of learning is very much disrupted."

Above all, Dr Main believes, disabled students must make their needs known. "I think they often fear asking too much of an institution. But they must realize they are paying consumers of the college or university and say, 'Here I am, I've got this particular disability. What are you going to do for me? We don't think they should feel they've got to wait until they're offered something."

Computers need help to find their tongue

Jon Turney looks at efforts to invent machines that will understand us

My computer doesn't understand me. This is not something to take personally. Like other computers, it's made that way. And here lies one of the most intractable problems facing the new breed of information technologists.

When computers were the tools of a small band of specialists, it mattered less that the only way of instructing the machines was through a laboriously learned programming language, inscrutable to the outsider. It enhanced the mystique. While the principles of most languages are simple, like the computers which run them, many a would-be user has been deterred by the apparent complexities of FORTRAN, COBOL or their relatives.

Now it's different. As falling costs have brought computers in reach of everyone, the manufacturers can't afford machines which make such uncompromising demands on their human masters. If computers are ever to become truly ubiquitous, we need to teach them to understand us.

This is known in the trade as the problem of the man-machine interface and solving it will mean advances in a host of fields, some of them still ill-defined. It will mean designing computer systems which deal in the same signs and symbols we use ourselves - speech, writing, pictures.

It will also stretch the bounds of computing technology. It is significant that the architects of Britain's Alvey programme for advanced computer research - who singled out the man-machine interface as one of four crucial steps on the path to more "intelligent" computers - found the details of the research hardest to formulate in this area.

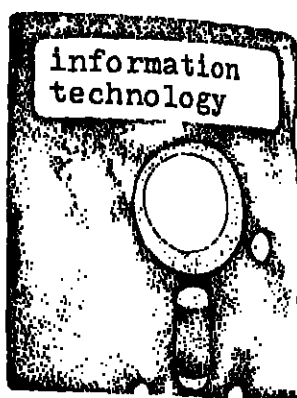
Some of the Alvey money is likely to find its way to Leicester Polytechnic, one of the strongest IT centres in the public sector. Here, Professor Ernest Edmunds' research group, which make up the neutrally named Human Computer Interface Research Unit, is a good place to see how some of the problems might be tackled.

Workers in the unit are tackling a wide range of questions about how people can get sense out of electronic circuits, and they need to call on a collection of disciplines. The unit includes people with training in psychology and logic, computer science and signal processing, statistics and linguistics, and ergonomics.

One of their starting points is to build a set of routines into the computer system which handle its dealings with the user. The naive user can then be treated to a "dialogue management system". This is less like Big Brother doesn't interact directly with the program performing the task at hand, but with an intermediary system which can understand a reasonable number of English words typed out on the keyboard and translate them into the appropriate inputs.

This is the kind of set-up which Professor Edmunds says the interface must embody the user's model of the system. That is, the dialogue manager must have a built-in set of responses which don't differ wildly from those the user is expecting - or the dialogue will quickly grind to a halt.

One of the most impressive applications of this so far has been a system



developed a year or two ago by Unilever. Unilever asked Edmunds and his colleague Steven Guest to develop their SYNICS dialogue package to run a set of programs for advising process engineers on a shopfloor about new detergent formulations. The total package, used by the expert systems widely known as the artificial intelligence community, contains 100 or so rules about the different components of a detergent together in cleaning - culled from Unilever researchers' experience with trials of known powders.

The finished system allows the lever engineers to predict the performance of variations in the process mix without the trouble of full lab work. Sir Geoffrey Allen, Unilever's search director, describes the system as a "living report", a working book of theory, text, graphics and maths. The beauty of the SYNICS operation is that the program, originally set up the system as FORTRAN, but the user need know nothing of this.

Work at Leicester has also been application in a system to help diagnose brain diseases from the aged recorded by X-ray scans. Derek Tenthon and others at Leicester are working with Professor Geoffrey Doolley at the Institute of Neurology, London, who has compiled a 60-year database of brain scans. All diagnoses entered have been confirmed by autopsy.

The rules arrived at can now be used to help other neurologists interpret the fuzzy black and white images which the best pictures we can get of a living brain. The system asks the doctor questions about the scan, and can explain specialized terms used in request. When development is complete, it will be a powerful teaching aid as well as a diagnostic tool.

These systems are impressive, but they still rely on patient key-panels - and none of the exchanges between machine and operator can come near the ease and fluency of natural speech. The imperfections of our dialogue processing speech were displayed by the millions when a video dubbing system developed at Leicester was used by the BBC during the wedding in 1981. Even this relied on much of a human stenographer translating the commentators' words into phonetic symbols as on the computer program which turned the symbols back into words for subtitles.

Other researchers at Leicester are now trying to bridge the gap fully by the stenographer by exploiting the unit's expertise in image processing.

To do this, they need to train the computer to read spectrograms - voiceprints. In the end, the information will be transformed from speech into computer coding, and finally into a display of the correct words. The sounds laborious, and at the moment the Leicester effort is still limited on single words, trying to tell the difference between, say, "advent" and "advent" when they are printed as spectrograms.

The current system can manage a few hundred words. But recognition is still erratic, and appears to rely heavily on affectionate coding and whistling by the operator, as well as on the inherent abilities of the program.

Watching the computer patiently hunt down the screen for a word which matches the input given brings home that this research is far away from the goal of the Alvey program. That is step towards a computer that can understand.



Scan of a normal brain

Anthony Sutcliffe on how beleaguered historians can do more to shape their own future

Past tense . . . future imperfect

Late in 1982, *The THES* hosted a debate on the need to "defend" the historical sciences ("Why history needs defending?" by J. M. Bourne, October 22, 1982, and subsequent correspondence). Throughout last year, the newly founded History at the Universities Defence Group, in cooperation with the Historical Association, worked hard to ensure that history's case was heard.

In February this year that effort was rewarded when Sir Keith Joseph, speaking at a London conference organized by the defence campaigners, stated his firm belief in history as "an essential component in the curriculum of all pupils". Appropriately, the full text was published in the second issue of *The Historian*, the Historical Association's well-timed attempt to create a broader readership for historical studies.

So far, then, the defence seems to be holding up well enough. But defence it remains. The Historical Association's announcement of a series of campaign meetings early this year stated that their purpose was to "enable university departments and schools to unite in explanation to the public why academic history is necessary and why its disappearance would be a disaster, not just for education, but for the nation as a whole".

However, the disappearance of academic history is not a serious threat. Indeed, recent books by Oakeshott (*On History and Other Essays*) and Kenyon (*The History Men*), and Elton's inaugural lecture at Cambridge, have shown it to be full of health and confidence.

The danger therefore is not so much that history will disappear as that changes in its environment will reduce its significance as perceived by non-historians. This environment is currently formed by a disconcerted and disconcerting world in which limited resources are accompanied, paradoxically, by rapid technological change.

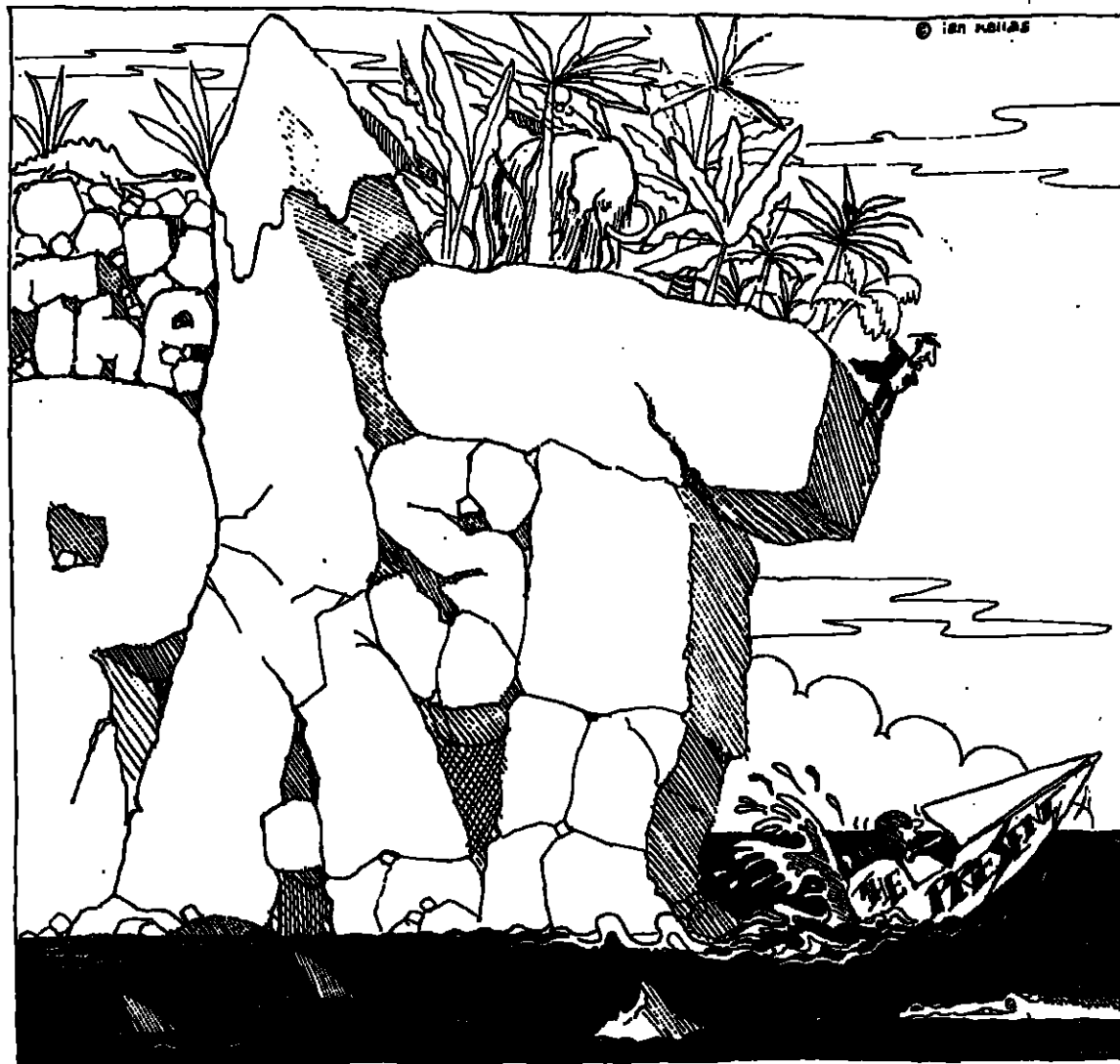
In the schools, that environment cannot be ignored. Nor can most university departments of history afford in the long run to ignore it.

At the February conference, the Secretary of State's address was followed by a less reassuring one from John Slater, HMI staff inspector for history. He pointed out that although history remained one of the most popular school subjects, "the number of candidates taking history in external examinations as a percentage of the total is slowly falling".

He attributed this result partly to competition from the social sciences "whose arrival in the school curriculum in some ways has been a success story", and partly to the "increasing vocational and instrumental" character of the school curriculum. In the face of these changes, he suggested, "too many historians are reacting in ways that are unwisely defensive and unnecessarily deferential".

Sir Keith Joseph had asked a rhetorical question: "Is it not an essential part of history teaching to bring home to pupils the implications of what they are learning for life in British society today?" John Slater reinforced the evidence for understanding what we have been and, thus, of what we are. It is, therefore, a crucial part of the evidence to help us understand what we might conceivably become.

On trend, the chances of academic history responding to this invitation to become more "instrumental" look slight. As Sir John Plumb has pointed out in *The Death of the Past*, the development of scientific history since the nineteenth century has undermined the "social use of the past". Clearly, in a fluid society of conflict and change, history cannot properly resume its pre-industrial function of



justifying the status quo. However, there is no good reason why history should not help people to understand their present and to some extent to anticipate their future in a way which, paradoxically, was clearly envisaged by the nineteenth century founders of modern scientific history.

Our perceptions of historical objectivity have been so fully reconstructed under the influence of such as Albert Einstein, E. H. Carr and Karl Popper that the idea of a present-related history should not cause alarm, particularly if it takes the form of an *augmentation* of historical activity rather than a reallocation of a fixed quantum of resources within the discipline.

An expansion of historical activity may seem hard to envisage at a time of financial contraction but scepticism about new initiatives is the inevitable product of a defensive posture. Edward De Bono's advice would be to begin from a premise of growth and to identify the circumstances appropriate to that growth.

How, then, might society come to value historical knowledge more than it does at present and employ more people and resources in the creation and transmission of that knowledge? These very questions were asked in September 1982, during the foundation period of the History at the Universities Defence Group, in a very different forum. This was the Social Sciences Research Council Anglo-Dutch seminar on applied historical studies which was held at the Erasmus University of Rotterdam. Attended by historians and social scientists from the Netherlands, Belgium, France, the German Federal Republic, the United Kingdom and the United States, the seminar ranged widely over history's development since the nineteenth century and the future. The plausible assumption was made that, the greater history's capacity in this respect, the more likely was it to secure additional

resources which would be seen by society as an investment rather than a form of consumption. Since 1982 this debate has been carried on in the UK principally by the working group on applied historical studies at the University of Sheffield, but the main locus of activity still remains North America, where its principal organizer is the public history movement described by Peter Beck in a *THES* article last year ("History goes public", January 21, 1983).

Public history emerged as a self-conscious movement in the United States in the late 1970s. Together with its associated tendency, applied history, it is partly a response to declining enrolments in departments of civil or military administration, company historians, members of conservation project teams, media advisors, and in fields such as archive work, librarianship and information science where a historian's skills can add a levelling to more technical expertise.

Academic historians, however, are by no means excluded from the movement. On the contrary, they enjoy the enviable freedom to initiate historical research in policy-related areas. At Carnegie-Mellon University in Pittsburgh, the centre of the applied history movement, Peter Stearns and Joel Tarr have extended the university's strong tradition of applied studies into the historical arena by developing research into the control of pollution and the provision of the urban infrastructure. In cooperation with colleges in civil engineering, Joel Tarr has been able to advise on the maintenance of Pittsburgh's century-old sewerage system, for instance by predicting which sections of the sewers are most vulnerable to breakdown because of their initial design and construction characteristics. In Europe, François Bédarida's Institute of Contemporary History in Paris and Leslie Hannah's Business History Unit at the London School of Economics are engaged in comparable work even though they do not normally label it as applied history.

Indeed, the Rotterdam conference in 1982 sensed that this university-based branch of the movement was likely to be more prominent in Europe because a weaker private business sector and less pluralistic political process could not sustain the employment of historical consultants and in-house historians at American levels.

Instead, Europe would draw on its strong tradition of public policy-oriented historical work within the universities, a tradition which dated back to the heyday of German *Kathederso-*

logy. This extension is bound to be located partly in the area of contemporary history, but it would be unfortunate if specialists in other periods felt that they had no part to play. On the contrary, as our world moves towards a future which we currently identify as "post-industrial", we sense a growing affinity to a past which no longer seems quite as "lost" as Peter Laslett once described it.

In the 1950s and 1960s, when the world was "going for growth" and apparently succeeding, it may well have appeared that the experience of our pre-industrial and industrial past, dogged by Malthusian and other cyclical crises, had little to teach us. Keynesian economics had, it seemed, made a clean break with the past.

Nowadays, we are only too well aware that some of the difficulties which dogged us earlier in the industrial era have caught up with us again. At the same time, we sense a return to a pre-industrial existence in which under-employment is rife, life centres on the home and an informal or reciprocal economy exists alongside the formal one.

Yet for all this, we are aware of the capacity of our industrial system to generate rapid technological change, and we seek to predict both that change and its social implications. Only by setting our present in a perspective stretching back to the origins of human civilization can we hope to take a grip on our destiny. In the bewildering circumstances of our present we need our past more than at any time since the last war.

A conscious attempt to create an applied branch of the historical sciences in the mid-1980s would not undermine, therefore, the search for common understanding which is the task of all historians. On the contrary, it would reinvigorate it, infusing historical endeavour with a sense of social purpose to which the self-sufficient history of an Oakeshott cannot aspire.

History for its time, not history for all time, can properly be the goal of many of us. The world is looking to its historians to lay their hands on the tiller, to provide the wisdom for which a new age of uncertainty so clearly yearns. Historical experience suggests that some historians at least will not fail to respond to the call.

The author is professor in the department of economic and social history, at the University of Sheffield and chairman of the Urban History Group.

of confidence in the practice of historical inquiry.

In January 1983 Peter Beck concluded: "Compacency and inertia might prove to be the historian's worst enemies." His defence of his institutional base pushes the history away from its real concerns? Would the best defence be renewed attack and a reawakened sense of history as the concrete preoccupation of the present, part of the process that brought about our society?

Maximum benefits, minimum harm

Morris Freedman looks at the hazards and opportunities of privatization

How can the United States meet the national crisis of rising college and university costs and still maintain educational quality and intellectual freedom? The American problem parallels emerging crises in France, West Germany, and, not least, Great Britain. The French want their professors to work longer weeks. The Germans hope to finance great research centres. And the British are talking about drastically modifying their tenure practices.

Costs of higher education in the States are rocketing. At the well-known private institutions students now pay out well over \$10,000 each annually. Out-of-state students at public universities pay nearly as much, and state residents commonly not much less. Each year these figures rise dramatically. Yet student fees contribute smaller and smaller portions to the budget needed to keep a campus operating respectably.

Where does the rest come from, or rather, where will it come from? Direct state and federal support long ago reached their limits. Business, foundations, individual philanthropists, alumni have been giving to their fullest.

Two leaders in American higher education, president Steven Muller of Johns Hopkins, Baltimore, and Chancellor Clifton R. Wharton, of the State University of New York (SUNY), hinted on a national television program at a modified form of what the British call privatization. Chancellor Wharton commented that the medical enterprises of SUNY have contributed markedly to reducing the system's total operating cost throughout the state. Johns Hopkins University itself has long been a combination of large and small traditional academic satellites revolving around a medical school sun.

Yale University has already entered into an agreement with Bristol-Myers and the Celanese Corporation to market drugs resulting from cancer and enzyme research on its campus.

This alone is expected to generate over \$4m a year. The heart transplant centres at Texas and west coast universities produce millions in profits.

Medical facilities are only one revenue source. Royalties have flowed to campuses, into professors' accounts or campus treasuries, from agricultural and engineering patents and from books. Oxford and Yale university presses have been among the world's most profitable publishers. At the University of Tennessee, profits from a freshman textbook support myriad activities that might otherwise not exist. Real estate holdings have long helped subsidize Columbia University in New York City.

Two of the world's major microchip corridors, computer and video companies exploiting the new technologies, flourish in university areas, around Harvard and MIT on the east coast and Stanford and Berkeley on the west. The University of Maryland is planning a research park to work cooperatively with firms concentrating in new technologies. Pharmaceutical houses in Philadelphia and New Jersey and chemical manufacturers in Missouri depend on campus associations.

The symbiotic interdependence has long been clear of advanced university activity and the needs of the country: industry itself lavishly supports experimental facilities modelled on graduate school structures. It lures faculty with promise of campus atmosphere and freedom. Bell Laboratories and General Electric research are celebrated instances. The National Institutes of Health, in the Washington area, among the foremost medical research clusters in the world, are commonly referred to as "the campus." American Nobelists have come from private industry and government as well as from universities and the military and other government agencies still depend heavily on university projects. At least one campus exists virtually on federal defence support.

Natural forces have already linked federal, private, and university enterprise, but only recently to the specific end of subsidizing higher education generally. Academic complexes, like Harvard and MIT, have been entering into operating agreements, for example, with the new genetic engineering

firms, whose profits promise to be enormous, to allow faculty to perform simultaneously on campus and in the business. Private publishing has joined campus scholarship to issue new standard editions of the great American writers. And campuses have the prospect of staggering sums from sports events as cable television expands.

None of these arrangements is without great risk. Conflicts of interest seem inevitable. SUNY has already had to resolve possibly scandalous consequences of outside earnings by medical faculty. Johns Hopkins has proceeded most cautiously in establishing routine transplant assembly lines.

Acknowledging the potential danger in campus-commercial partnerships, the presidents of Stanford, Harvard, Berkeley, MIT, and Cal Tech met secretly with officials of 11 large corporations to consider how to sustain maximum mutual benefits with minimal effect on learning, research, and teaching.

Who becomes responsible under any measure of privatization for shaping and managing a campus? The president and his deans? The faculty? Trustees, regents, legislators? Company boards of directors? Alumni? All, some, or none of these? Faculty traditionally used to govern institutions of higher learning. They determined curriculum, recommended appointment and promotion of other faculty, and granted degrees, among other responsibilities. Today professors are becoming generally less and less sure of their roles as campus administrators preempt ancient faculty functions. The National Labor Relations Board ruled that faculty may not organize into unions where they exercise certain managerial authority.

Few sensible observers contend that faculty alone should manage campuses. Professors have enough to do in the classroom, library, and laboratory without having to worry about budget, tuition, and many other campus concerns. To override self-interest, higher authority must exercise social judgment in approving appointments and promotions, determining new directions in curriculum, and maintaining scholarly integrity and achievement.

The elevation of administrators and concomitant exclusion of professors in management, however, is not universal or complete, and the exceptions are instructive. Academically superior state and private campuses, for example, still defer to faculty. The denigration of professors is most evident at large public institutions, as Justice Brennan suggested, which have become, or have ambitions to become, simply complex businesses focused on showing a profit at virtually any sacrifice.

The dangers of privatization are clear. Competitive excesses in getting and keeping grants or contracts, for example, can destroy the freedom essential to true collegiality. Learning and research thrive on significant differences of opinion, on iconoclastic originality, on open sharing of creation and discovery. Some overgrown campuses, like the companies they try to emulate, release adversarial jealousies that undermine productivity. Profit-seeking managers may not understand the community need to support the "unprofitable" study of classical languages, literature, pure mathematics, or philosophy.

Nevertheless what is good for business may turn out in the long run to be very good indeed for higher education. On the better campuses, wise administrators subordinate their managerial roles and careers to the communal ends of teaching and learning.

Private industry and professional sports in America have learned to accept, and even initiate, controls to reduce predatory and self-destructive tendencies. Similarly, universities in open financial cooperation with private and government enterprises may be expected to work out ways to maintain simultaneously their benign character, their independence, and their mission of offering to anyone who is "motivated" and "qualified," to cite president Muller's words, the opportunity for education.

Where in the past many academic departments have chosen not to use mainframe computers, the "user friendliness" power and ever-growing range of software has encouraged the introduction into courses of micro-computers. American experience suggests that this will eventually lead to a fuller use of the mainframe facilities themselves.

Although many departments have started to develop computer use, two general problems face any overall strategy for using computers on courses: funding and appropriate software.

Given the tight capital and revenue situation there are very severe constraints on funds for initial purchase of both hardware and software, maintenance, programming and technical support and staff development.

Most educational software has been written by academics interested in their own specialized subject and consequently this material is often in an unrelated area and at any one of a number of levels of complexity. Some of it is designed for use only by the author and therefore may present many problems to another user due to both poor programming and the lack of adequate documentation. It is no use following this kind of haphazard development. What is required is a departmental strategy for several years ahead. The immediate feeling may be "it's impossible" but to optimize scarce resources, some attempt at forward planning must be made.

The first step is to examine the various types of program that are available.

Class demonstration falls into two areas, the first for illustration of a principle where substantial calculations are involved and where manual calculations would be wasteful; then, to present a slide show on the computer with the user.

Calculation and simulation; basically rapid number crunching by the student but with the additional benefit of allowing a number of iterations to be carried out quickly. This removes the drudgery out of complex calculations and allows the student to concentrate on problem formulation and solution.

Computer managed learning packages represent a number of areas including computer assisted learning, computer enhanced instruction, computer enhanced learning, and so on. Such programmes are labour intensive and are unlikely to feature in the early stages of a development plan.

Tests may be for staff to use for course assessment or for students to assess their own progress.

Random question generators should be available in the main subject areas so that staff may easily generate new questions and, particularly in numerical subjects, provide each student with a different question in order to reduce cheating. These are also useful in learning a principle for a student can sit at a workstation and generate several simple questions one after the other, all slightly different, until the principle is learnt.

Commercial packages cover such areas as modelling accounting systems, word processing, statistics and others. In general, these are expensive and present problems on micro unless multiple copies of the software are available.

Business games should be available at various levels of complexity. They provide an opportunity for the student to test out the theories learnt on the course. They may be competitive where several teams compete against each other or the student(s) may play against the program.

Private industry and professional sports in America have learned to accept, and even initiate, controls to reduce predatory and self-destructive tendencies. Similarly, universities in open financial cooperation with private and government enterprises may be expected to work out ways to maintain simultaneously their benign character, their independence, and their mission of offering to anyone who is "motivated" and "qualified," to cite president Muller's words, the opportunity for education.

Natural forces have already linked federal, private, and university enterprise, but only recently to the specific end of subsidizing higher education generally. Academic complexes, like Harvard and MIT, have been entering into operating agreements, for example, with the new genetic engineering

A solution to the computer problem

Tony Aykroyd gives his suggestions for successful forward planning

Administration packages would include areas such as word processing, data management and modelling. Obviously some programs may be classified under more than one heading. How one defines them is less important than gaining a clear understanding of how each may be used within given courses.

The second stage is to examine each subject area taught by the department to see if a computer can sensibly be introduced into this area, what types of program would be required and how many levels of complexity are required (should there be one program with several parts or should there be several separate programs?).

Once an analysis of outline program specifications and program suitability has been completed, some order of priority will have to be assigned to the development work. This will start with a realistic appraisal of the available resources such as cash, hardware, software, programmers' time, and staff time. It will also require a decision as to which types of program are to be purchased and developed.

In specifying the resources which will be required, it is essential to consider hardware and software, security, technical support, programming resources, staff time and accommodation

Most departments would like some computer managed learning packages but to produce one hour of program take up to 1,000 hours of effort. This is likely to put this kind of program well down any list of priorities. However, there are some packages available now that simplify the preparation of such programs.

Priorities will also have to be given to the courses for which material is to be developed. Concentrating on first year courses has an obvious appeal in that programs are likely to be less complex and therefore easier to develop. But remember that programs which are simple for the user may be complex for the person developing them.

It is not suggested that lecturers should program; far from it, this is a very inefficient use of resources. However, lecturers do need to have some understanding so that they can communicate with programmers during the preparation of program specifications, and the subsequent development phase. Specifying programs is the responsibility of lecturers and should reflect their special ability as teacher.

This requires considerable effort both in thinking how a particular topic should be presented and also in preparing the calculations required for the program, the screen formats, print formats, test data, documentation and

coursework required for use with the program. The last two can make a break the initial success of the program. Not all students are keen to use computers and any problems that arise will provide a good excuse for opting out.

Some attempt then has to be made to prepare for several years ahead. This will inevitably have to be a "brush" approach but some aims can be specified. Any plan will need updating at least once a year as actual experience prove to be very different from the original plan; some areas will develop faster than expected and may have to be put back to later years. The important thing is to face the problem, prepare a realistic plan of action and update it as required.

Existing resources should always have been examined during the previous stages and there will most likely be a substantial gap between existing and required resources. One problem facing many departments is that those who have not been capitalizing since whereas now there is a need to invest substantial sums of money.

The preparation of a plan not only provides for departmental development but also provides the information to support departmental bids for resources. A well thought out plan only increases the chances of obtaining resources.

In specifying the resources that will be required it is essential to consider technical support, programming resources, staff time, and accommodation. One particularly scarce resource is staff time and this will have a major impact on any development work.

Particularly of software. Three possible approaches suggest themselves: try to obtain the additional resources for staff and programmers to do the work in a professional manner; or, for somebody else to do it; or, finally, to develop it oneself with existing resources.

The first option is obviously the most desirable and every opportunity should be taken to acquire the necessary resources. The second is a poor starter in most departments because no one is prepared to see their common falling behind the quality of work provided in other institutions. The problem with the final option is that the only way in which staff can create the time is by allowing their teaching to suffer. This is not popular with most staff but unless appropriate resources are made available there is little alternative but to go about and attempt development with the existing resources.

As additional resources are unlikely to become available in sufficient quantities to alleviate this problem, the optimum use must be made of what is already available. To make that use it is essential that a departmental strategy is carefully achieved.

The author is senior lecturer in the department of accountancy and company administration at Sheffield Hallam Polytechnic.

Setting out a departmental strategy

YEAR ONE

Purchase commercial package. Purchase "teach yourself typing" program to develop staff and student keyboard skills. Concentrate effort on first year courses. Develop programs for use on micros. Submit proposals for conversion to mainframe if appropriate. Develop teaching material to complement programs. Start a staff development programme. Consider or develop use of games. Students writing programs for projects. Commercial packages to be used on projects such as Vitec, Supercalc or other clones.

YEAR TWO

Develop more sophisticated programs for micros. Continue conversion of suitable programs to mainframe use. Concentrate effort on second year courses. Start work on third year projects involving use of computer.

External workshops and seminars. More advanced modelling packages such as Micro PCS. Micromodeller.

YEAR THREE

Concentrate effort on third year courses. Develop higher level programs, tests, question generators. Introduce graphics for student work. Students projects using linear programming and forecasting packages. Evaluation of accounting packages by data processing and auditing students. Develop more external contracts.

YEAR FOUR

Introduction of CML programme. Final year students involved in computer based projects. Computers used during examinations. Computer based case studies. Development of more CML programs.

Presences

Living in the imagination

By the time he died, C. S. Lewis had an enormous range of friends and acquaintances, many of whom knew nothing of each other. He had an extraordinarily magnetic quality without being an attractive person or personally in the ordinary sense and without ever seeking out other people. He was the centre of groups which his presence, but not his actions, created. There were some who disliked him: women who were offended by a vein of anti-feminism or an unintended rudeness; and a few men who passionately disagreed with his theological or literary views or perhaps thought him overrated. None of his tutorial pupils, of whom I was one, felt other than respect and a perhaps somewhat distanced affection: for part of his power to attract seems to me to have been a sort of warm, almost zesty, impersonality.

He was deeply interested in the life of the imagination, thus in all kinds of books, all kinds of topics. He was extremely generous, cheerful, friendly; patient as a man who controls a natural impatience; but not as far as my acquaintance went, much interested personally in other people or in himself. His general fame now is as a religious writer. His conversation, at any rate with me, though it would include religion among many other topics, was never pious; he was not churchy, nor in any way either confessional or proselytizing. Yet I suppose in retrospect that the deep quality that caused people to seek him out was a certain passionate attention to the nature of experience, going beyond individual personalities, which one can only call religious.

He was known to me because he was my tutor, and there must be many others, as well as other pupils, who knew him better or in a more rounded way. I came up as a very unsophisticated earnest undergraduate to Magdalen in the autumn of 1941 to spend a year reading English before going to the war. A day and half a week was spent in military training. I had tutorials alone with Lewis, who was exempt from service on grounds of age and occupation. I would knock on his door, up the staircase in the centre of New Buildings in Magdalen (built in 1730 and barely modified up till then) as the clock struck in the Great Tower, and he would normally finish as promptly. He had rather dully furnished rooms and we sat on each side of the marble fireplace while I read my weekly essay.

On my return from the war more often went to an inner study. Although he had a goodly number of books, they were not particularly impressive and he had no interest in books as objects, or even much interest in scientifically edited texts.

My first tutorial was on Milton's minor poems. Lewis normally recommended texts, often, though obviously not in this case, more than one could read in a week, and rarely any critics. So I ground my way remorselessly through poem after poem, making no doubt many jejune remarks to which Lewis appeared to pay rapt attention. Reading one's essay aloud was in itself often an act of severe self-realization before such a listener, as well as testing one's prose rhythms. He made notes often of minor points of phraseology which he then commented on before we discussed the text in general.

Fortunately Lewis was as enthusiastic about Milton's poetry as he was and when it came to *Paradise Lost*, although he disliked the filigree with which I described the climate of Hell, being one of extremes, as "Continental", we had what to me at least were most enjoyable discussions.

He thought as little as I did of what he called Tillyard's "entre-guerre pacifism" as expressed in his Milton criticism (it may be recalled that in that year Britain, alone, against an apparently overwhelming German war-machine, was suffering the consequences of a decade of appeasement). But the tutorial hour once a week in three or four weeks was too precious to spend discussing war or politics or personal comments. On the other hand, Lewis felt no need to agree with, or to like so, to speak as persons, those authors whom he respected and enjoyed. Milton is a case in point. There were

Derek Brewer recalls his former tutor, 'the perfect Christian Humanist' C. S. Lewis

plenty of things about Milton's politics that Lewis might have disagreed with but he had a passion for his verse. "You feel so fit when reading it," he said. Naturally enough, that was for me at 18 a year of many intense experiences, apart from the intellectual excitement of being at the university, all enhanced by the knowledge that one was going to the war and might not return. Lewis rightly had no sentiment or sentimentality about that, and most of us did return, though one or two were sorely wounded.

On our return in November 1945, life was equally obviously intense, despite the greyness of post-war limitations, rationing, etc. During the next two or three years I saw a good deal of Lewis as a tutor and was then, I suppose, most deeply influenced by, though not always agreeing with, him. I wish I had had more of the hero-worshipper in me and had more diligently attended his lectures, but his books on literary criticism made a deep impression, reinforced by his personal interest and conversation, while fortunate accident led for a brief period to more sociable meetings.

The weekly tutorials resumed, though because of the overwork due to the return of ex-servicemen, a tutorial often had to be shared. The method was the same. Texts to be read and few or no critics presented to one. I recall that one week's reading on one occasion was Eliot's *The Waste Land*, Ascham's *Topophilus and Scholasticism*, Hobbs's *Translation of Castiglione's Il Cortegiano*, Sidney's *Apology for Poetry*. I can now see what that was all about, especially since Lewis's own great book on sixteenth century literature came along long ago, but I cannot say I did then, nor did he then give much of a clue.

What Lewis saw as important was the development of Humanism as represented by these books, though I believe that he quite misunderstood the debate between Humanism and Scholasticism. He espoused the cause of Scholasticism in the name of logic and rationality. Although he had a keen sense of the old-fashioned "grammarian" fantasies of critics basing themselves on *The Golden Bough*, because Lewis's attitude might well be described as a sort of historical literary anthropology. His lectures were very popular, very well-ordered and often amusing, though the clarity, logic and force of his exposition against might make them seem too positive for some. I heard the famous *Prolegomena* lectures twice, once before and once after going to the war. Despite the interval they remained vividly in my mind and time was the way in which jokes were so carefully prepared for, which had been quite imperceptible the first time round. The lectures were in their own ways works of art, and as carefully prepared as the rest of his intellectual work.

Lewis always thought about what was said. This could be irritating if one had naïvely ventured some angry response to the paper. From the brief remarks he and I sometimes exchanged about the Socratic at the beginnings of my tutorials, I think Lewis found it something of a trial. Miss Anscombe asked for a meeting and delivered her onslaught. I did not always go to the meetings and I missed this occasion. Several days later, at the dinner, Lewis was still miserable about it. He described his sensations in imagery of retreat and casualties and confusion - being fog of war. Dyson said finally that Lewis was now like: so many, with nothing, at the foot of the Cross: and the conversation turned to



Clive Staples Lewis: photographed in his rooms in 1962.

of manners. It was this sort of unselfconsciousness that earned him an undeserved reputation among some for rudeness. His originality was as uncalculated as it was unfashionable. No trendy paradoxes for him. At the "Schools Dinner" which he gave to his pupils when we had finished Schools, he said in his final examinations, I remarked that because of the lack of evidence, it was pointless to think about Heaven. "On the contrary," said Lewis in his most Johnsonian manner, "we think about Heaven far too little."

The supreme example of social meetings and literary conversation in my experience was the half-dozen or so dinners which, at the suggestion of Hugo Dyson, the English don at Merton and a devoted friend of Lewis's, he and Lewis and four of us elderly undergraduate pupils took part in once a term. They were usually extremely cheerful, talkative affairs in private dining rooms in Oxford pubs with wine and the modest food of those days. I sometimes found it a strain trying to be as intelligent and witty as the rest of my as the last pre-tenure or show. Lewis and Dyson in particular were naturally wonderful talkers.

We had the advantage, if such it could be called, in common, of all being ex-soldiers, though of two wars. It is a curious commentary on the unique turn of university life in the first half of the twentieth century that unimpaired and equally unimpaired literary men as we all were, five out of six of us had been in action as infantry officers. Lewis and Dyson had had a more terrible war and each had been seriously wounded. Two of my undergraduate friends had had equally terrible, though different, types of experience as Japanese prisoners-of-war.

One of our dinners was less festive. It was as it happened a day or two after the famous meeting of the Socratic Club in which Miss Anscombe, the Roman Catholic philosopher who later became a professor at Cambridge, routed Lewis's arguments in his book *Miracles*. The Socratic Club was a rather popular undergraduate club meeting fortnightly to discuss general religious questions. Different speakers gave different types of paper but Lewis was the president and always there. He was a sort of permanent star turn who was expected always to make the first response to the paper. From the brief remarks he and I sometimes exchanged about the Socratic at the beginnings of my tutorials, I think Lewis found it something of a trial.

Miss Anscombe asked for a meeting and delivered her onslaught. I did not always go to the meetings and I missed this occasion. Several days later, at the dinner, Lewis was still miserable about it. He described his sensations in imagery of retreat and casualties and confusion - being fog of war. Dyson said finally that Lewis was now like: so many, with nothing, at the foot of the Cross: and the conversation turned to

cheerful ribaldry. But Lewis did not really recover his spirit at that event. By the end of my undergraduate career I, like my companions, had read through a great swathe of English literature from Chaucer to Scott with Lewis, as well as doing some Old English, and a certain amount of plain annotation of various set texts, which latter he did as thoroughly and conscientiously as everything else. The abiding impression, beside a number of memorable remarks, was the breadth and variety of the subject and of the magnificent spirit with which he read. It is true that the course stopped at 1830 but it was assumed that literature was read for pleasure rather than credit. Much that had been written later figured in our talk, as many nineteenth century novels, writers such as Morris, Chesterton, twentieth century poets such as Eliot and Auden, or the latest novel written by one of our former pupils.

The basis of earlier literature was equally strong. I had received a letter from him before I came up to Magdalen sketching with typical grandeur of conception the background reading from which I would benefit, particularly the Bible and Classical Latin literature. Yet it was practical too. He selected some texts for emphasis and advised the Loeb translations as an aid to the rapid reading of Latin without neglecting the original. "Let reading be your only vice," he wrote. His general outlook on literature was catholic. Anything as exclusively narrow as a "great tradition" denoted by about four novels would have been inconceivable to him.

Within the breadth of range he responded more readily to romance than to tragedy, despite his literalism. He cared much about details of style, about clarity and density of expression, in other words, about literary standards, and he was certainly not undiscriminating: he was capable of distinguishing merit even when it was mixed with inferior material and of giving it generous credit. Himself a man of great personal generosity and absolute integrity, reverencing nobility in literature, a Christian Humanist who believed literature to be intrinsically good, he was not worried by and did not worry us with moralism. Marlowe he considered the most immoral of English writers after perhaps Carlyle because of the approval of brutal tyrants, their evil inversion of the good, their worship of (as he put it) Giant-the-Jack-Killer.

If he did not make a great fuss about morality he nevertheless found the world mainly evil and expected a calamitous end quite soon. He was not an easy optimist. But he was prepared to enjoy the good he found: "Many a green idle needs must be" as Shelley, one of his favourite poets wrote, "in the wide green sea of misery." The world, he thought, offers temporary inns and passing comfort and no permanent resting place.

The author is master of Emmanuel College, Cambridge.

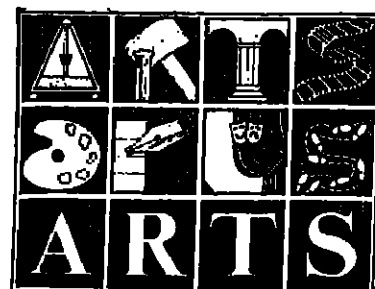
The collapse of ideals

Visiting the theatre in the last few years you might have been forgiven for thinking that you were caught in a time warp. The 1930s and 1940s, in particular, live again – and that means the time when the American theatre seemed the source of real dramatic energy. The works of Eugene O'Neill, Arthur Miller, Tennessee Williams, Lillian Hellman and Clifford Odets have all been revived recently, and with some effect. In New York or London at the moment you can see O'Neill's *Strange Interlude* (1928), Williams's *A Streetcar Named Desire* (1947), Miller's *Death of a Salesman* (1949) and Odets's *Awake and Sing* (1935) and *The Country Girl* (1950) (following a revival of one of his other plays: *Rocket to the Moon*, 1938).

Meanwhile the National Theatre, the source of a great number of these revivals, is about to offer another Odets play – *Golden Boy* (1937). In a sense it is tempting to see this as a reflection of the state of the theatre which, worldwide, is scarcely in one of its most enthralling and innovative periods (despite the brilliance of David Mamet and Sam Shepard in America and the sustained careers of a number of British writers). Or perhaps it says something about the way in which our own times seem so determined to reproduce the conditions of the past: mass unemployment, a demoralized liberalism, the dominance of economic theory and materialism over idealism; the loss, in short, of any notion of transcendence. And that fact, perhaps, suggests a bridge between the theatre of the eighties and that of an earlier period.

What links so many of the revivals of recent years is their characters' sense that they are living in times which fail to respond to their evident need for a meaning which exists outside the terms of public myths. The male protagonists of *A Streetcar Named Desire*, *Death of a Salesman* and *The Tenth Muse* are all salesmen (like the figures in Mamet's recent *Glenview Glen* and Ross), and the salesman tends to become a representative figure, putting the force of his personality behind values which are finally unconnected with private need. And the collapse of ideals, myths and even a language adequate to express a sense of genuine anxiety, leaves Odets's characters no less stranded than those of O'Neill, Miller and Williams.

Odets was the backbone of the Group Theatre (founded by Cheryl



Christopher Bigsby discusses the current popularity of Clifford Odets

Crawford, Lee Strasberg and Harold Clurman at the beginning of the thirties), which set itself up in opposition to the values of Broadway. He was briefly a member of the Communist Party and plays like *Waiting for Lefty* and *Awake and Sing* (both products of 1935) made him seem the chief hope of a radical theatre. But he quickly abandoned the Group Theatre for Hollywood where he compounded this act of desertion by marrying a movie star (Louise Rainer) and living a comfortable, if self-acusing, life. However, when the Group Theatre seemed on the point of collapse he wrote *Golden Boy* to hold them together. It was an ironic gesture, in so far as it is essentially the story of a man who trades in his talent and his convictions for fame and material well-being, a man who turns his back both on his own spiritual needs and the social realities which his brother, a labour leader, acknowledges. It is scarcely a play which shows Odets at his best but its confusions are instructive both in terms of his own life and those of a society in which idealism had already begun to shade into pragmatism.

There is a sense in which Odets never really the radical he presented himself as being and his plays not quite the committed gestures which they appeared. He was in the Party for barely a year and his later recantation before the House Committee on Un-American Activities was less a betrayal of his genuine convictions than an

acknowledgment of his own ambivalence. He wanted a morally better world in Roosevelt's sense rather than Marx's. He had a feeling that history was at a point of balance, that the ideal had to be re-invented or at least invested with a human meaning which ultimately seemed denied by the slogans of radicalism and the panaceas of liberalism alike. He believed he wanted social change but could never imagine what shape or direction that change might take. The betrayals had been too great. But he equally knew that the audience which he and some few others could claim was not the answer, recognizing the price at which it was purchased. He cared about those on the underside of American life – those for whom the easy rhetoric of politicians was merely ironic – but he could never invest his own confused yearning for transcendence with sufficient meaning or force to dramatize it effectively. Confusion itself became his subject and perhaps it is in that respect, as in his own uneasy cohabitation with convictions insufficiently rooted and defined to carry total conviction, that his work might strike us as contemporary.

By some strange refraction of historical light today's politicians seem to make tomorrow seem more and more like yesterday. And that process also operates on the level of culture. Obviously we can't let the classics of the modern theatre slip between our fingers: the revivals of recent years have been amply justified. They may even retain a subversive edge despite the context in which they appear. But they may also be the products of a period more willing to respond to the enthusiasms of the past, than to those writers who presently disturb our sense of the real and confront us with the ambiguities of the social and moral world. The challenge for the directors of such revivals is to prevent yesterday's urgencies from being transmuted into simple nostalgia; to retain a sense of danger, to capture a certain cultural innocence without condescension. There does, after all, remain a real fascination and power in the writer's attempt to bite on the coin of history, even though its counterfeit nature is perhaps now more clear than once it was.

Dr Bigsby is reader in the department of English and American studies at the University of East Anglia.



The cast of "On the Outbreak" from Z Theatre Company, University of Hull.

Firmly in the real world

Bretton Hall College is a world elsewhere. Entering the walled estate with its eighteenth-century mansion and man-made lakes it's easy to let the real Yorkshire of embattled picket lines simply fade away. But the ivory tower potential in the setting for this year's National Student Drama Festival was knocked squarely on the head as the lights went up for the first performance. Four bristling, Mohican-coiffed punks jostled to centre stage and in a rapid series of sharply etched scenes delivered a group-devised play based on a true story of drugs, despair and suicide.

This was high octave, nascent theatre with all the attendant rough edges but with its monkey boots planted firmly and honestly in the real world. Its engaged vitality was characteristic of much of this year's festival. Indeed of the 18 productions selected to represent the best of student drama six were brand new works concerned with contemporary issues.

Splash Theatre's *Tracks* makes startling theatrical mileage from the mask quality of the punk image. The cast of four Bretton Hall undergraduates – Mervin Baskerville, Colin Doores, Christopher Noon, Paul Sadot – as well as playing the on-going protagonists, double as an array of acutely observed authority figures with only minimal adjustment to the basic punk gear. Thus in an oblique but cumulative way one becomes aware of the face beneath the mask. The audience is forced to renege reflex responses to the outlandish externals of punk nihilism and dig deeper into motivation. Andrew Williams's direction steered sensibly clear of glamorizing the life-style but offered an illuminating glimpse of a pathetic quest for heightened experience in a joyless urban existence.

Minstrophs High School's *Simple Game* is another new play based on fact by writer Jane Thornton after a year spent working with young offenders. This witty and moving portrayal of the real kids behind the Youth Training Scheme statistics was played with energetic relish by a largely teenage cast, and a simmering, political dissatisfaction emerged from a well-placed, spartan production by Mick Callaghan.

Judicious use of simple staging to allow clearer focus on content was also a feature of Lancaster University's *Bread n' Butter Guns*. Here was another ambitious new piece which probes the painful impact of Northern Irish politics on family life and won for its author, Mike Ellison, a fortnight's secondment with Yorkshire Television's Drama Department courtesy of BP, sponsors of a number of awards at the festival. Also bound for a stint with YTV is Alex Renton, author/director

of Exeter University's *A Twist of Lemon*, a skilfully constructed monologue about heroin addiction among the junior executive class.

Two other award winners should have hawk-eyed impressarios descending on Hull and Manchester to contracts at the ready. *On the Outbreak*, conceived and written by Z Theatre Company from Hull University, with music by Nick Phillips (who also directed and played piano) was the popular hit of the festival. Its charming, chamber musical with at least two numbers – "Women's Medi Rag" and "Ballad of a Child Misplaced" – worthy of lives of their own whatever happens to the show. Its four female characters are discovered in a doctor's waiting room, disguised by women's magazines. They emerge to sing and dance their way to a sequence of ingeniously interlarded counterpointed soliloquies, out of their various psychosomatic disorders and into a new shared consciousness of life-affirming self-determination. The unashamedly romantic, rousing conclusion, which incidentally also maps up the fourth character, the downy glacial receptionist, in its all-enveloping optimism, won as much vociferous applause from the festival audience as did the virtuosity of the performers: Meg McDonald, Kate Atkins, G.B. Baskerville and Maureen Gladie.

Finally, to the sixth new and undoubtedly another woman to watch: Polly Teale of the Manchester Umbrella Company who won *The Sunday Times* Playwriting Award for her script, *Growing Pains*. This is a well crafted family comedy about a mother failing to adjust as the children grow away from her. Polly Teale is in the Ayckhourn knack of creating rounded people who are at once recognizable types and idiosyncratic characters. She combines this with a dramatist's eye for simple but revealing stage business – mother and daughter, for instance, folding a household patchwork quilt, momentarily united as they recall the happy associations of each lovingly assembled piece of material. *Growing Pains* is the assured work of a naturally gifted playwright oozing with potential. Granada TV, I notice from the programme, give financial assistance to Manchester Umbrella. I hope they've read the script and commission more from Ms Teale.

Ed Thomason

Ed Thomason is a writer and director. His most recent production, *The Great Nebula in Orion* by Lennox Wilson, opened at the Centre Stage Péguy in London in April.

BOOKS

Resisting 'the craving to believe'

by John Dunn

Class Power and State Power: political essays by Ralph Miliband
Verso/NLB, £18.50 and £5.95
ISBN 0 86091 073 3 and 773 8

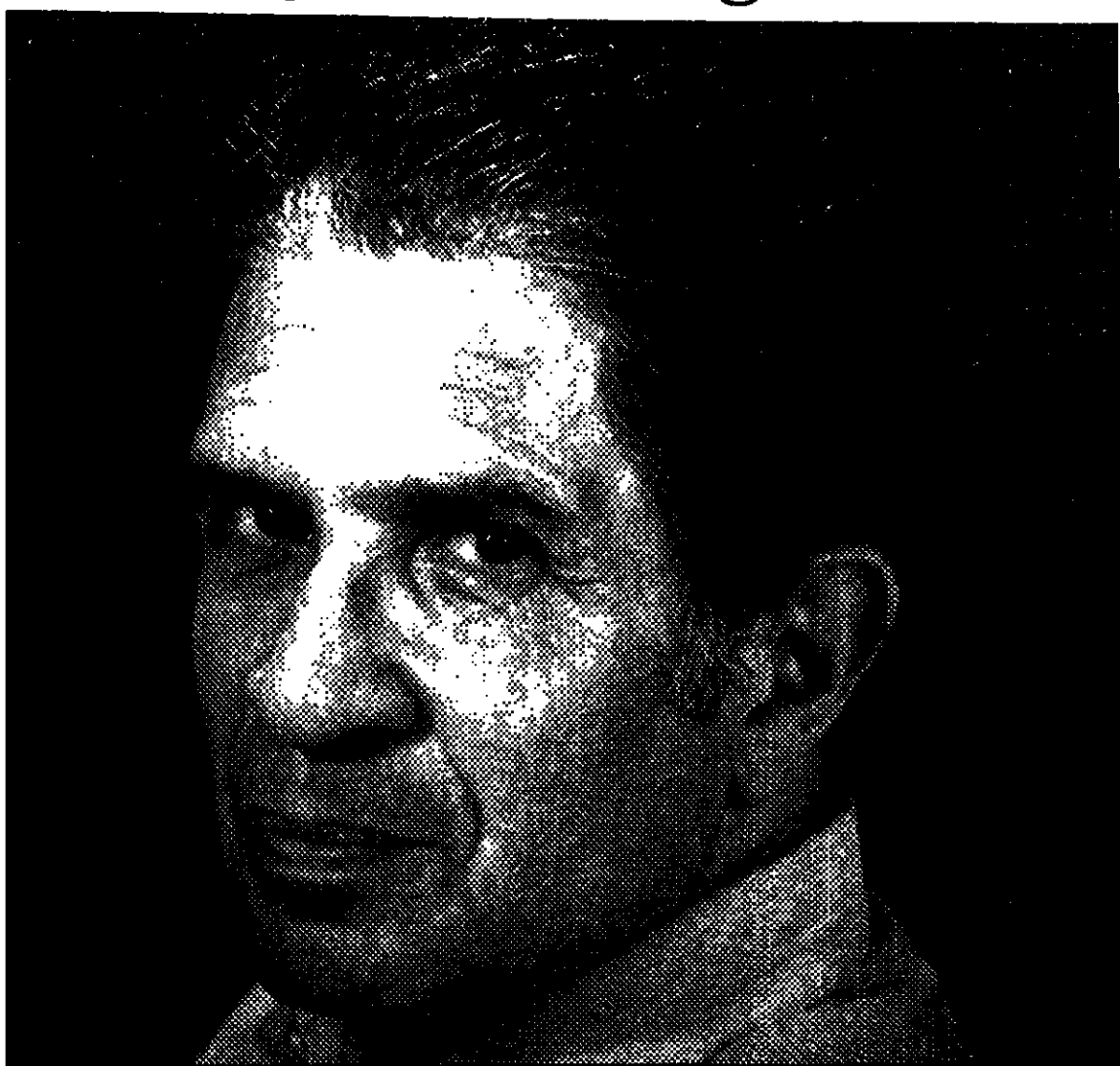
"What is capitalism?" "Capitalism, Comrade, is the oppression of man by man." "And what is socialism, Comrade?" "Why, socialism is the same in reverse." (Fairly old Polish joke). For Ralph Miliband, this is certainly a joke in poor taste; but the grubby realities to which it points have engaged his intellectual and emotional energies for at least three decades.

The essays collected in *Class Power and State Power* span almost two of these decades and seek to restate, without undue credulity, the socialist verities in the face of their discouragements. They cover a wide range of topics, from the moderately scholastic (Marxist theories of the state and the appropriate classificatory label for the USSR) to the miserably practical (what lessons the Chilean catastrophe holds for western socialists and what forms of action by whom can reasonably be hoped to diminish the risks of thermonuclear war).

More scholastic themes have already been treated extensively in Miliband's earlier writings: *Parliamentary Socialism*, *The State in Capitalist Society*, *Marxism and Politics*, and *Capitalist Democracy in Britain*. But even these themes gain in weight and interest when seen more explicitly, as they are in the present volume, in the light of his personal political preoccupations. On these scholastic questions, Miliband is on the whole sensible and realistic. It was principally his good sense that especially incensed the late Nicos Poulantzas and elicited some of the latter's most bombastic and abusive expressions of abuse.

There are two new and useful scholastic exercises in the present volume, one on "State Power and Class Interests" and a second on "Political Action, Determinism and Contingency" which seeks to rescue Marxism as a theory of history by drawing a distinction between "generational history" in which particular individuals, manifestly often makes all the difference in the world and "transgenerational history" in which, in the long run, such difference as it makes, with the possible exception of commencing thermonuclear war, can be confidently expected all to come out in the wash. Even with the thermonuclear caveat, this judgment surely underestimates the amount of lasting mischief which can be (and sometimes is being) done today from the centre of really powerful modern states. It is one of the important imaginative deficiencies of Marxism that it so overestimates the subordination of men's capacities for destruction to their collective capacity to produce more abundantly for their own and others' use.

Much of what Miliband has to say about practical politics displays the same realism and good sense as his more scholastic proposals. He is particularly good on the weakness of the Marxist tradition in thinking about how to construct better states and how



Ralph Miliband

to exercise political power in a humanly benign fashion, emphasizing how far public ownership of the major means of production is from being a sufficient condition for realizing the political goals of socialism and underlining, again and again, the weakness of institutional thinking about a socialist political order and the malign implications of according monopolistic authority to a political party which does not even permit open political discussion or conflict within its own ranks. On these issues he has made an admirable attempt to shake off the accumulated political crudity of the socialist tradition, to avoid "exchanging one set of blinkers for another". As he says at one point of the appraisal of regimes which on balance one views with political favour: "The craving to believe is very strong; but it surely ought to be resisted."

So indeed it ought. But once it has been resisted, what beliefs are likely to prove robust enough to survive it? To attempt to face up to all the bad news at once is what it is to do modern political theory seriously. But none of us is likely in practice to display quite this level of heroism; and to succeed in doing so is to risk depriving oneself of political allegiance or conviction altogether. Miliband has made a valiant effort to expunge one particular range of political crudity from his

socialist convictions. But he retains plenty of residual convictions and a correspondingly firm sense of allegiance. Which elements of the bad news is he still falling to face?

Capitalism, in his eyes, is simply a bad thing, because it is economically (and therefore socially and politically) oppressive. And socialism, if only its politics were more realistic and less confused – if only it could get itself politically sorted out – would be a good thing because it would not need to be (and therefore would not be?) economically, socially or politically oppressive. Now, not even Mrs Thatcher or President Reagan (perhaps not even General Pinochet or Major D'Aubusson) is in favour of economic, social and political oppression for its own sake. But all of them do what they feel they have to in order to safeguard what they believe most needs to be safeguarded: in Miliband's vocabulary "capitalism", or, as they would be more likely to put it, "civilization". On the most optimistic construction, socialism could only hope to prove socially and politically unoppressive if it proved to be economically pretty successful. Yet in recent decades, in a wide variety of ways, it simply hasn't. There is at present not merely no intellectually coherent socialist theory of collective property, domestically or internationally, but also no intellectually or

practically coherent socialist theory of how to organize a modern industrial economy or even a relatively backward peasant economy on socialist lines in an effective manner. Nor is there any coherent socialist theory of the appropriate terms on which for socialist economies to conduct international trade with one another, let alone with capitalist economies. At no point in his book does Miliband discuss the economics of socialism, or so much as acknowledge that there is anything intellectually very problematic about these. One does not have to be a convinced believer in the Marxist theory of history to judge that this omission is likely to prove important.

The capitalist view of capitalism is that, although it looks pretty unjust as a system at any particular time (and although brooding over social justice within its domain should therefore be culturally discouraged in the first instance and, if necessary, politically repressed in the last) it actually does improve the real living standards of most people more dependably and more rapidly than any other mode of economic organization so far devised by human beings. The socialist view, which harps on the systematic injustice of capitalism and the immediate harm which it often does, and which also points to the somewhat erratic and hazardous historical course of capital-

ist economies and states, is that socialism could and would dispense with the injustice, while sustaining at least as dependable and rapid an improvement in real living standards for the great majority of human beings. Both of these views are more than a little overgeneralized; and the collision between them is quite likely to bury us all. But at present the burden of proof between the two falls, if anywhere, upon the socialist rather than the capitalist view. In the face of Mrs Thatcher and President Reagan (let alone their Latin American friends and relations) this is scarcely a very cheerful state of affairs.

These lacunae are particularly important when Miliband comes to consider what is certainly the most important single issue which he confronts: the question of what pressures are most likely to lead in practice to thermonuclear war. His views here are in fact a little equivocal since they firmly identify the United States (in contrast with the Soviet Union) as "subject to the logic of imperialism" and yet at least flirt with the hypothesis that it may not be in the rational interest of the American state (and those interests which it seeks to defend), even short of Armageddon, to commit itself so zealously to the military defence of entrenched privilege throughout the Third World. For the logic of imperialism to serve to define one's political allegiance here, it would need to be firm and Aristotelian: not the tangled Hegelian mess which it in fact is.

Miliband closes his collection by espousing the slogan adopted a century ago by the Social Democratic Federation: "Educate, Agitate, Organize". It is an admirable political formula, as far as it goes – even if it may recently have been implemented more successfully in this country by students of Professor Hayek than by those of Karl Marx. But at present (and perhaps always) it is definitely not for socialists a sufficient political formula. In particular it needs to be supplemented by a fourth imperative: "Think!" The most important question about socialism remains today, as it always has been in the past, the question of whether in the last instance it actually makes sense; whether it really is an intellectually coherent project. To be intellectually coherent is not a sufficient condition for a political project as extensive and transformative as that of socialism genuinely to succeed; but it most emphatically is a necessary condition. To discover whether socialism can be an intellectually coherent project is going to require facing up to far more of the bad news at once than Miliband has yet served himself to do. But nothing in his book could serve to discourage anyone brave enough to try making the attempt; and the book as a whole is an engaging reminder of why so many decent people for so long should have hoped that it did make sense and given their lives to the struggle to enable it to do so.

John Dunn is a fellow of King's College, Cambridge. His book, *The Politics of Socialism*, will be published in the autumn.



Jeremy Ryan, who plays the fighter Joe Bonaparte in the new National Theatre "Golden Boy", having his hands taped by boxing manager Terry Lawless, technical adviser to the production. Previews begin on Tuesday.

Events

Continuing exhibitions:

To May 22, Library, University of Warwick. Paintings and prints by Joan Townshend.

To May 23, Arts Centre, Aberystwyth. Photographs by Ron Davies and Pam Hughes.

To May 24, Gallery, Brighton Polytechnic. *Arnold Daghani: a religious spirit in art 1944-1984*. Part of the Brighton Festival.

To May 25, Foyer Gallery, North Staffordshire Polytechnic. *Psychographical Views* by J. P. Witz.

To May 25, University of York. Modern Prints from York collections.

To June 10, Sainsbury Centre, University of East Anglia. *Alberto Giacometti: the last two decades*. A view of the mature work of the Swiss sculptor who died in 1966.

New exhibitions:

From May 15, Gallery, University of Leeds. Prints by Manet.

From May 16, Victoria and Albert Museum, London. *Rococo: art and design in 18th-century England*.

From May 25, Whitworth Gallery, University of Manchester. *Foster Associates: recent work*. Norman Foster was last year awarded the RIBA Gold Medal for architecture.

Concerts:

Tomorrow, Playhouse, Newcastle. Pentecostal Choir of the Firstborn Church of the Living God. Inspirational choir participating in the Newcastle Jazz Festival.

May 13 and 14, University of Nottingham. Alligri String Quartet in "in residence" and will give two concerts and a workshop.

From May 14 to May 19, Gardner Centre, University of Sussex. Orchestra from Goldsmiths' College's National

Centre for Orchestral Studies participate in four performances of Giordano's *Andrea Chénier*, a New Sussex Opera production. Part of the Brighton Festival.

May 17, Lancaster University. BBC Philharmonic Orchestra with Mayumi Fujikawa (violin) in a concert of Bartók, Glazunov, and Sibelius.

May 18, University of Manchester. A "sound experience" devised by staff and final year composition students, including *Lux Aeterna* for 16 voices by Ligeti, and the forty-part *Spem in Altum* by Tallis.

May 18, Great Hall, University of Surrey. Brodsky Quartet in a programme of Bartók and Mozart.

May 19, Turner Sims Concert Hall, University of Southampton. The Paragon Singers, a debate on literary theory theory presented by Terry Eagleton and Roger Scruton.

Tonight, tomorrow, Contact Theatre, University of Manchester. Adaptation of H. G. Wells's *The History of Mr Polly*.

May 14, Institute of Higher Education, Calicut, India. Poets in person Norman MacCaig and John Crichton Smith.

Fifteen concerts, six by the Lindsay String Quartet, and nine by Bernard Roberts (piano).

May 21, University of Warwick. Paul Tordella, accompanied by his daughter Maria de la Paz (piano) in a concert of Liszt, Schubert, and Brahms.

May 22, University of Essex. Gabrieli String Quartet, with Neil Saunders (horn). Mozart and Brahms.

Other events:

Today and tomorrow, Last two days of The Essex Festival in Colchester. Events at the university include poetry readings by Alan Brownjohn and George MacBride, and a debate on literary theory theory presented by Terry Eagleton and Roger Scruton.

Tonight, tomorrow, Contact Theatre, University of Manchester. Adaptation of H. G. Wells's *The History of Mr Polly*.

May 14, Institute of Higher Education, Calicut, India. Poets in person Norman MacCaig and John Crichton Smith.

University of Warwick. Newsworld Productions present Julian Mitchell's *Another Country*.

From May 14 to May 19, National Theatre, University of Lancaster. National Theatre of Brent in *The Complete Guide to Sex*.

May 16, University of Surrey. Lecture by Antonia Fraser: *"The Weak Vessel"*.

From May 16 to May 19, Contact Theatre, University of Manchester. University drama department production of Caryl Churchill's *Could Nine*.

May 18 and 19, Riverside Theatre, New University of Ulster. NUU Ballet and Contemporary Dance Society perform.

May 18 and 19, Gulbenkian Theatre, University of Kent. Check by Jon Peel sent an adaptation of Thackeray's *Vanity Fair*.

May 22 to 25, University of Reading. English and music departments present John Gay's *The Beggar's Opera*.

Worker control

Rethinking Socialism: a theory for a better practice by Gavin Kitching
Methuen, £3.95
ISBN 0 416 35840 3

Socialism, in Kitching's view, means democratic control over the human and natural environment: the more control there is, and the more democratic the society, the more democratic the society. Catechistic ideas of "socialist revolution" are out; the building of socialism is expected to be a business of co-operation. It requires an active, self-disciplined working class, prepared to take control of production

and to participate fully in local and national politics.

This perspective implies some radical changes in socialist thinking. The traditional identification of the working class with manual labourers has to be broadened to include everyone who lives by working for a wage. Advances towards socialism are most likely to be made by those who are most likely to put it in practice to display quite this level of heroism; and to succeed in doing so is to risk depriving oneself of political allegiance or conviction altogether. Miliband has made a valiant effort to expunge one particular range of political crudity from his

socialist convictions. But he retains plenty of residual convictions and a correspondingly firm sense of allegiance. Which elements of the bad news is he still falling to face?

Capitalism, in his eyes, is simply a bad thing, because it is economically (and therefore socially and politically) oppressive. And socialism, if only its politics were more realistic and less confused – if only it could get itself politically sorted out – would be a good thing because it would not need to be (and therefore would not be?) economically, socially or politically oppressive. Now, not even Mrs Thatcher or President Reagan (perhaps not even General Pinochet or Major D'Aubusson) is in favour of economic, social and political oppression for its own sake. But all of them do what they feel they have to in order to safeguard what they believe most needs to be safeguarded: in Miliband's vocabulary "capitalism", or, as they would be more likely to put it, "civilization". On the most optimistic construction, socialism could only hope to prove socially and politically unoppressive if it proved to be economically pretty successful. Yet in recent decades, in a wide variety of ways, it simply hasn't. There is at present not merely no intellectually coherent socialist theory of collective property, domestically or internationally, but also no intellectually or

practically coherent socialist theory of how to organize a modern industrial economy or even a relatively backward peasant economy on socialist lines in an effective manner. Nor is there any coherent socialist theory of the appropriate terms on which for socialist economies to conduct international trade with one another, let alone with capitalist economies. At no point in his book does Miliband discuss the economics of socialism, or so much as acknowledge that there is anything intellectually very problematic about these. One does not have to be a convinced believer in the Marxist theory of history to judge that this omission is likely to prove important.

The capitalist view of capitalism is that, although it looks pretty unjust as a system at any particular time (and although brooding over social justice within its domain should therefore be culturally discouraged in the first instance and, if necessary, politically repressed in the last) it actually does improve the real living standards of most people more dependably and more rapidly than any other mode of economic organization so far devised by human beings. The socialist view, which harps on the systematic injustice of capitalism and the immediate harm which it often does, and which also points to the somewhat erratic and hazardous historical course of capital-

ist economies and states, is that socialism could and would dispense with the injustice, while sustaining at least as dependable and rapid an improvement in real living standards for the great majority of human beings. Both of these views are more than a little overgeneralized; and the collision between them is quite likely to bury us all. But at present the burden of proof between the two falls, if anywhere, upon the socialist rather than the capitalist view. In the face of Mrs Thatcher and President Reagan (let alone their Latin American friends and relations) this is scarcely a very cheerful state of affairs.

These lacunae are particularly important when Miliband comes to consider what is certainly the most important single issue which he confronts: the question of what pressures are most likely to lead in practice to thermonuclear war. His views here are in fact a little equivocal since they firmly identify the United States (in contrast with the Soviet Union) as "subject to the logic of imperialism" and yet at least flirt with the hypothesis that it may not be in the rational interest of the American state (and those interests which it seeks to defend), even short of Armageddon, to commit itself so zealously to the military defence of entrenched privilege throughout the Third World. For the logic of imperialism to serve to define one's political allegiance here, it would need to be firm and Aristotelian: not the tangled Hegelian mess which it in fact is.

Miliband closes his collection by espousing the slogan adopted a century ago by the Social Democratic Federation: "Educate, Agitate, Organize". It is an admirable political formula, as far as it goes – even if it may recently have been implemented more successfully in this country by students of Professor Hayek than by those of Karl Marx. But at present (and perhaps always) it is definitely not for socialists a sufficient political formula. In particular it needs to be supplemented by a fourth imperative: "Think!" The most important question about socialism remains today, as it always has been in the past, the question of whether in the last instance it actually makes sense; whether it really is an intellectually coherent project. To be intellectually coherent is not a sufficient condition for a political project as extensive and transformative as that of socialism genuinely to succeed; but it most emphatically is a necessary condition. To discover whether socialism can be an intellectually coherent project is going to require facing up to far more of the bad news at once than Miliband has yet served himself to do. But nothing in his book could serve to discourage anyone brave enough to try making the attempt; and the book as a whole is an engaging reminder of why so many decent people for so long should have hoped that it did make sense and given their lives to the struggle to enable it to do so.

control of the environment" would, in a modern context, be a very complex affair. In one place he embraces here socialist socialism, an idea which implies that many of the specific outcomes of a socialist economy would be unplanned and, in that sense, uncontrolled. Yet the idea that the entire social order should mirror the human will has not been completely exercised from his thinking.

This pioneering book deserves to be read by everyone concerned about the future of socialism. If Kitching has not broken as clearly as I would wish with Marxism, he has shown in almost every other respect a refreshing willingness to defy received opinion, and to re-work socialist ideas in a clear and forthright way.

David Miller

David Miller is a fellow of Nuffield College, Oxford.

BOOKS

Explosive mission

Apparent Narrative as Thematic Metaphor: the organization of *The Faerie Queene* by Jan Karel Kouwenhoven. Clarendon Press: Oxford University Press, £19.50. ISBN 0 19 812819 3

With its neo-medieval form and its philosophic eclecticism *The Faerie Queene* in many ways reflects "the very age and body" of its time. Since the 1960s, the great decade of twentieth-century Spenser criticism, the most original scholarship has been directed towards these two aspects of Spenser's epic, with theorists on the one hand

re-examining its allegorical technique and cultural historians on the other attempting to establish a context for its ideas.

Kouwenhoven's preface states that the intention of this book is to examine the two broad critical approaches. His thesis is twofold: that Spenser's allegory does not make sense read as realistic fiction, and that either the form of *The Faerie Queene* or the act of reading it (I am not entirely sure which) is in some way a paradigm of the Christian life.

The first part of Kouwenhoven's thesis - that "we must treat the fiction as allegory" - will be familiar to those who have read Rosamond Tovey who, nearly twenty years ago, argued that *The Faerie Queene* should be read, not as realistic fiction, but as a series of narrative fragments united by their allegorical meaning. By applying a ruthless literalism to the central characters of Books III and IV, Kouwenhoven demonstrates that non-sense can quite easily be made of Spenser's stories by an insensitive reader.

The second part of his thesis receives less ample treatment. Asserting, in the face of received scholarly opinion, that

The Faerie Queene is an essentially Calvinist poem, he states that "the poem's meaning is given. Through grace its readers are atoned with their Father that sees in secret: having to wait till Doomsday to be illuminated openly". Quite apart from the logical problems entailed in attempting to show how a poetic based on the principle of *uile et dulce* can be combined with a Calvinist soteriology, it is not easy to see how reading *The Faerie Queene* can be regarded, except in a frivolous sense, as an act of atonement. If there is an answer to this question it may perhaps lie in further research into the relations between theology and poetry in the Renaissance. But Kouwenhoven makes no first-hand reference to English Reformation theology nor to the considerable body of recent scholarship on Protestant poetics.

In his preface Kouwenhoven claims that the mode of Spenser's poem enacts its theme. In one sense this could also be said to be true of his book. As he sets about what he calls his "explosive mission" of rescuing *The Faerie Queene* from the ineptitude of its modern critics, Kouwenhoven, like

the penitent in Donne's *Batter My Heart*, senses the need to "force, to break, to blow, to burn" in order to rehabilitate. In the end, however, it is not the critics who suffer so much as the English language. Like Spenser's Talus dismembering his enemies with mechanical violence, Kouwenhoven makes such "crucial havoc" with words that at times his page looks like a verbal battlefield strewn with the *desjuncta membra* of mutilated sentences. On page 28 he writes:

The Letter to Raleigh presents *The Faerie Queene* as an allegory with a multifarious vehicle throughout [sic] irradiated "atready - not yet" by its true tenor, glory - magnificence - (any) virtue. The relation between vehicle and tenor, puzzles as epiphany, parallels that between the tenor's components, trials as mysteries.

This is a book whose argument, as the author himself ingenuously admits, "is as inadequate as it is selective".

Robin Headlam Wells

Robin Headlam Wells is lecturer in English at the University of Hull.

Training dark and light

The Lords of Limit: essays on literature and ideas by Geoffrey Hill. Deutsch, £12.95. ISBN 0 233 97581 0

Geoffrey Hill has written some of the most distinguished poetry of our time. It is also some of the most difficult. That is true also of his critical work now first collected under the title, *The Lords of Limit*. The essays are a reference to an early poem, "The Candidates Pass". The crucial line is "O Lords of Limit, training darkest light...". These "Lords" ultimately derive from Revelation 11 where they appear as witnesses over mankind. Limited themselves, they are nevertheless able to set boundaries to human endeavour. Evidently this, something like it, is Mr Hill's characterization of Southwell, Jonson, St. Hopkins, Green, Ransom and Frost the authors he chooses to discuss.

Each author is also to some extent allowed to characterize himself through his own words. But the questions are selected with a view to projecting Mr Hill's vision rather than that of his authors. The common theme, correspondingly angled, Thain says, fictive contexts tend to be selected for the original ones. For example, one of the "desperate statements" ascribed to the urbane poet, St. John Crowe Ransom, turns out to be a *sine*, a mild complaint about the last lines. The "creative distress" fallen upon T. H. Green derives, at least in part, from that philosopher's own dislike of Berkeley's idealism. It seems that the "tress" is in the mind of the reader, the commentator. One doubts whether the Victorian memorialists who supplied Mr Hill with much of his information would have recognized their contemporary, the Balliol note, in the figure here presented.

Even writers of the stature of Shakespeare and Ben Jonson are diminished by being seen in terms of their lesser works. Mr Hill adduces respectively *Cymbeline* and *Caesar*, and brings to them his characteristic quality of attention. But traversing the peripheries of a classical oeuvre leads to hermeneutics rather than to mastery. Does the book's intention, with a sense of "anguish, toil and pain" - to use another of Mr Hill's words - displace what is said, and quite characteristically, it is Swift's verse rather than his prose that is in question.

As these comments will suggest, Mr Hill invokes aspects of his authors that render them less versatile and more melodramatic than they appear in their primary texts. Yet no reader will go back to those texts in quite the same mood as he left them. To that extent this book possesses remarkable qualities. However, they are not the qualities normally associated with literary criticism. Although no trace of academic methodology is permitted to intrude, this is an anthology of deconstructions. Mr Hill's enterprise would have been clearer if pursued had it been frankly presented as a series of readings. What we have here is a set of readings with certain people of importance in their day. *The Lords of Limit* offers more of a fictionalized portrait of, among others, Ransom, Green and St. John Crowe Ransom. It is a portrait that stands as putative companions to the figures as Arruiz and Péguy, already precipitated in Hill's condensed, almost verse.

Those who have struggled with this verse and, less gratefully, this prose may wish in the present case for a further recession. They would greet all the more cheerfully if it came out unambiguously as a new collection of poems.

Philip Hobsbaum

Dr Hobsbaum is reader in English literature at the University of Glasgow.

BOOKS

Relative poverty

Responses to Poverty: lessons from Europe edited by Robert Walker, Roger Lawson and Peter Townsend. Heinemann Educational, £18.50. ISBN 0 435 82908 4

Despite the fact that many of the needs are common, different countries have designed very different systems of income maintenance and many of them have had considerably greater success than Britain in using them to reduce the poverty of their populations. Given the enlightenment that can come from comparative research in the field, it is remarkable how little of it is carried out. That which is done is often inadequate, consisting of no more than descriptive accounts of provision in different countries.

The papers in this welcome collection originated with a seminar at the Civil Service College. The focus of the book is anti-poverty policies and there are sections on unemployment and low pay, family policies and benefits for the elderly. Within each section there are descriptive chapters on provision in different countries which include France, Netherlands, Germany and Denmark. It is perhaps an interesting reflection of the strength of social policy research in Britain that chapters on French pensions, Danish unemployment policy and Dutch pensions have been written by British academics. The bulk of the book is naturally taken up with these detailed analyses of each country's schemes and they will be of interest to specialists.

The best parts of the book are an introductory essay by Peter Townsend which provides the basis of a European conceptualization of poverty; a resourceful essay by Robert Walker which, using published international statistics, compares the level and structure of social welfare expenditure in the European Community countries; and a concluding essay by Roger Lawson and Robert Walker. This chapter draws the lessons of the analysis for UK policy and some of these conclusions are really quite surprising. For example, Britain has been more successful than many countries in restricting the numbers in extreme poverty. This is largely because our supplementary benefit system is relatively more generous than other countries' assistance schemes. But unlike other countries, in Britain vast numbers of people are dependent on supplementary benefits and so a much larger proportion of all people on low, means-tested benefits. The heavy use of means-tested benefits compared with other countries is, the authors argue, one of the reasons why the poor have been "marginalized". In other countries social security provision is an institutional part of the social structure.

At the beginning of each section of the book the editors present a systematic survey comparing provision in the different countries but these are for the most part culled from other published sources and not from the material in the country chapters. This is presumably because the detailed chapters on each country's provision were not sufficiently consistent in scope and coverage to provide the necessary information in comparable form. This of course is one of the major weaknesses of this method of comparative research. You cannot rely on experts from different countries to provide consistent material. What is needed now is for the benefit studies in this book to be researched and studied in a more structured method. The case for doing this is also strong because most of the data in the country chapters relate to the 1970s and a very different economic climate.

For those interested, an update of some of the material by the editors of this book has been published as a Fabian Society Briefing.

Jonathan Bradshaw

Professor Bradshaw is director of the Social Policy Research Unit at the University of York.



Down-and-outs in London, 1973, by the war photographer Don McCullin. A new collection of McCullin's photographs has just been published by Collins at £3.95, with an introduction by Mark Hayworth-Booth.

Towards social reality

Alfred Schutz: an intellectual biography by Helmut R. Wagner. University of Chicago Press, £23.80. ISBN 0 226 86936 9

The work of Alfred Schutz repays constantly renewed attention. Indeed it demands it, for Schutz is not a writer who reveals his importance to the casual glance.

His painstaking analyses of the most fundamental structures of action and the friendship of men of the quality of Aron Gurwitsch and Eric Voegelin, with both of whom he kept up a voluminous correspondence on matters of mutual intellectual concern, were no protection against the fate which he himself met with his tireless exertions.

Wagner's biography is almost exclusively concerned with Schutz's intellectual life. The single dominant project of that life was to provide interpretative sociology, as Max Weber had conceived it, with a rigorous and secure philosophical foundation. At first Heidegger and then Edmund

Husserl seemed to offer Schutz the key to achieving this. But as Wagner makes clear, even his definitive adoption of a phenomenological approach learned from Husserl never made Schutz the devout Husserlian he is sometimes taken to be. One or two writers have suggested that Schutz's "phenomenological sociology" is based upon a misreading or arbitrarily partial understanding of Husserl's philosophy, especially of the transcendental phenomenology which is a crucial stage in Husserl's quest to set philosophy upon a basis of undeniable certainty. The criticism is misplaced.

Schutz's departures from Husserlian philosophy were occasioned neither by misunderstanding nor by unadmitted doubts as to the value of the phenomenological approach to social science. Schutz was not a social scientist searching for a ready-made philosophical system in which to base his research. He was an original philosopher within the phenomenological current whose differences with Husserl arose out of the realization that on a few but vital issues the arguments of the older man lead thinking to an unnecessary impasse. Schutz's rejection of the transcendental turn in phenomenology was a consequence of his recognition of the idealist and even solipsist implications of a line of thought which made the fact of our awareness of other minds into an insoluble problem. The publication of Schutz's correspondence with Gurwitsch, promised as the fourth volume

Crimes of the powerful

Power, Crime and Mystification by Steven Box. Tavistock, £12.95 and £6.50. ISBN 0 422 76400 0 and 76410 8

The purpose of this book is to redress the traditional criminological concentration on crimes of the powerless. To this end, the author marshals data from England and the United States to produce lucidly written accounts of how people are socialized into corporate crime, police corruption, violence, and sexual violence against women, and why so little is done about these acts. The last two chapters are equally good reviews of theories of female crime and the causes of trends in imprisonment. Steven Box is particularly good on the ways in which the powerful neutralize the potential moral and legal implications of their misconduct.

This book certainly fills a gap in the market for a radical-empirical student text, and Box exercises much care in drawing readers' attention to methodological flaws and directions of bias in the data. Yet despite my sympathy with his explanatory and moral perspective, it would be inadvisable for students to swallow it whole.

The chapters on corporate crime, police crime, and rape seriously underestimate (and do not fully explain) variations in their prevalence. Readers are misled at times on the law of rape, and Box forcefully asserts without any supporting evidence that recidivism of rapists "is more than likely" and that rapists would be deterred by longer prison sentences. While it is plainly true that many women feel pressurized not to refuse sex with bosses and husbands, it seems to me absurd to term all powerful/powerless interaction

course "rape": how are the powerful ever to know that consent is genuine? Or do we just abolish power and sexism?

I am also left wondering who is mystified by whom about what. The public are not mystified about the seriousness of the crimes of the powerful, and when even conservative popular newspapers such as the *Daily Express* are full of critical exposés of corruption, freemasonry, and allegations of police violence, it is difficult to sustain the view that they are wholly mystified about their pervasiveness either. Certainly, they are vastly underprosecuted and pressure groups succeed in keeping outside the law many acts that are more harmful than those that are criminal. But apart from the excellent documentation, what else is new to students these days?

In his analysis of the relative immunity of the powerful, Box fails to take seriously enough the majority public perception - right or wrong - that, unlike *lumpen* blacks and whites, corporations and police overall make positive and necessary contributions to their lives, and that most harmful consequences of corporate and police activities are unintended. Moreover, the exclusive focus upon Anglo-American examples obscures the high incidence of elite crime and pollution/safety violations in countries like Russia and China.

Box (like the rest of us) does not resolve the issue of how conceptions of "the crime problem" are generated and sustained, and it is surprising to see so little attention devoted to the role of the media in this. Moreover, his standard Left solution that "democratic accountability" (to whom, for what?) will produce humane and just policing and sentencing is too unspecific to convince any sceptics. However, despite these criticisms, this book is strongly commended as an important and literate point of departure for those interested in these key criminological and political issues.

Michael Levi

Dr Levi is lecturer in criminology at University College, Cardiff.

The angel in the house

Women in the English Novel: 1800-1900

by Merryn Williams. Macmillan, £20.00. ISBN 0 333 33396 9
The Lady of Shalott in the Victorian Novel by Jennifer Gribble. Macmillan, £20.00. ISBN 0 333 33019 7
The Fallen Woman in the Nineteenth-Century English Novel by George Watt. Croom Helm, £15.95. ISBN 0 389 20443 9

Discussions of the ways women are portrayed in nineteenth-century English fiction have recently proliferated, as the select bibliography in Merryn Williams's book indicates. The understanding, idealization or denigration with which men and women novelists have presented them are an indispensable part of any analysis of their social and personal relationships.

So much material is available that Merryn Williams's clear survey, systematically and economically written, is a welcome guide. She opens with an account of marriage, divorce, work, and the beginnings of moves towards emancipation, conveniently assembling facts (on women's rights, for example) that are often elusive in conventional social histories. Her second introductory chapter deals with ideology, including the different sexual standards expected from men and women and the images of women in fiction. In connection with those images, she notes that the women depicted "are overwhelmingly upper or



"The maniac father and the convict brother are gone. The poor girl, homeless, deserted, destitute and gin-mad, commits self-murder." This is the last print in an eight-part temperance series by George Cruikshank entitled "The Drunkard's Children". It is reproduced in *Realizations: narrative, pictorial and theatrical arts in nineteenth-century England* by Martin Melser (Princeton University Press, £38.30).

upper-middle class" (and the same could be said of the men, of course). She goes on to discuss chronologically the work of the century's major and minor novelists from Jane Austen to Thomas Hardy. Jane Austen's rational and independent heroines have few successors in Victorian times, as Merryn Williams points out. Even George Eliot's ideal was the woman who did "beautiful loving deeds" and who maintained an "adherence to obligation." But more liberal attitudes were shown towards the end of the century in the novels of George Meredith, George Moore, George Gissing and Hardy. Perhaps Merryn Williams could have given greater emphasis to Meredith's portrait of Clara in *The*

Egoist; her anguished "meditations" on the conflict between love and duty are a key passage in the fictional treatment of women's problems. It would have been interesting, too, to have some comments on Rhoda Broughton, whose early novels still sparkle.

Without suggesting conscious influences, Jennifer Gribble aims to show that Alfred Lord Tennyson's poem, "The Lady of Shalott", "touching as it does on such Victorian romantic concerns as the emblematic lady, the social position and rights of women, and the nature and function of creative imagination," is a pervasive symbol in the fiction of the age. After a preliminary consideration of the elements of the poem - the Lady herself, the room where she is confined, the mirror and the web, and the curse - she discusses *Villette*, *Little Dorrit*, *Middlemarch*, *Jude the Obscure* and *The Wings of a Dove*, with a brief concluding chapter on Virginia Woolf.

One of her methods of approach is to analyse *tabulae vivanae* that recall the Lady of Shalott's enclosed room and vantage point: Little Dorrit "gazing out at the world from the prison garret", Dorothea at her window in the Vatican museum or Milly Theale in her Venetian palace. By means of an often subtle commentary, Jennifer Gribble brings out the tensions the novelists seek to demonstrate between the temptations and demands of the external world and the opinions and desires of the isolated woman. Charlotte Brontë, for one, juxtaposes "Lucy's" impetus of solitary self-enclosure against a pattern of events that forces her engagement with life.

Tennyson's poem is also emblematic, she suggests, of the form of the novel itself. The room can be seen as representing a pause for contemplation and the shape of the fiction; the "watcher" is the "creative consciousness" at the heart of the book; the web is the novel's pattern, notably "vivid and virginal" in *Middlemarch*. Interestingly, then, Jennifer Gribble demonstrates the interplay of narrative

content, structure and feminist issues, though she is principally concerned with psychological detail and the heroines' relationships with other people.

George Watt discerns two fundamental divisions in the Victorian attitude towards women - an attitude he justifiably associates with middle-class views of respectability; the difference between male and female moral standards and the opposed images of the "virtuous and the fallen". He painstakingly examines novels by Charles Dickens, Mrs Gaskell, Wilkie Collins, George Moore, Anthony Trollope, Gissing and Hardy, in order to prove that those writers described various sorts of "fallen women" with a sympathetic appreciation of their faults and vulnerability. Unfortunately, his writing contains malapropisms, pleonasm, misused prepositions and vague pronouns. He disconcertingly compares factual and fictional evidence: Mrs Henry Wood is aligned with Bradshaw in *Ruth* and Dickens with Nancy in *Oliver Twist*, for example. But his choice of texts is enterprising, since he includes Collins's *The New Magdalen*, Trollope's *An Eye for an Eye* (though A. O. J. Cockshut has already made some crisp comments on this) and Gissing's *The Unclassed*.

Some of Watt's particular observations are worth noting: Mrs Gaskell's "development of a noble heroine from a 'sinful girl'" in her characterization of Ruth, Trollope's shift of emphasis in *An Eye for an Eye* from the "fallen woman" to the man responsible for the woman's disgrace; and Moore's insistence on Esther Waters's lack of shame. In general, there runs through the book a sense that to some extent the Victorian novelists helped to soften the harshness of their public towards "fallen women".

Donald Hawes

Donald Hawes is head of the department of language and literature at the Polytechnic of North London.

Developmental Dyslexia

Its nature, assessment and remediation

Michael B. Thomson

Studies in Language Disability and Remediation 7
A thorough overview of theory and practice in the study and treatment of dyslexia in children. The nature of the syndrome is outlined, with detailed case histories giving insight into the problems faced by children affected by it.

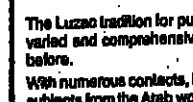
£9.95 approx paper 224 pages Publication July



Edward Arnold

41 Bedford Square, London WC1B 3DQ

LUZAC, publishers and booksellers since 1740, points you in the right direction.



The Luzac tradition for publishing and selling books began in 1740, and we now have a more varied and comprehensive selection of books on the Near, Middle, and Far East, than ever before.

With numerous catalogues, both in this country and overseas, coupled with a supply list covering subjects from the Arab world to the heritage of India, Hinduism to Islam, and the Japanese arts to Egyptian history, we feel confident that any student of the Orient will find the book that they are looking for.

To help you further, Luzac have compiled a series of catalogues covering every subject that we stock. By sending for any of these catalogues, you are guaranteed a complete list of books available on the subject, as well as the personal and experienced service of over 240 years in the world of books.

Just complete the order form on the right, and post it back to us. You won't have to pay for anything - not even the postage - and then you'll see that East is the only direction we look.

Catalogue Order Form.

Please send me catalogues on the following:

☐ HINDUISM ☐ BUDDHISM ☐ ISLAM
☐ MIDDLE EAST ☐ FAR EAST ☐ CHINA
☐ LANGUAGES ☐ LITERATURE ☐ ARTS

Name

Address

Please complete and return to:
Luzac & Company Limited, Freeport,
46 Great Russell St., London, WC1B 3BR

BOOKS

Christian survival

The Frankish Church
by J. M. Wallace-Hadrill
Clarendon Press: Oxford University
Press, £35.00
ISBN 0 19 826906 4

The Frankish Church, published in the term following his retirement from the Chichele chair, is, in every sense, Dr Wallace-Hadrill's major work. Since he made his reputation over thirty years ago with *The Barbarian West*, his standing as the British authority on early medieval history has not been in doubt, but his publications have been predominantly of highly polished lectures, originally delivered separately, or in series. Only with the appearance of this work have we a big book on a momentous theme, a book equal to the subject and to the reputation of the author.

Exceptionally among modern British scholars, he brings to the study of the middle ages a mind disciplined by classical literature that reaches forward to contemplate the future of civilization in barbarian custody, rather than one looking back in search of origins; a mind, too, inclined to probe the recesses of such of the literary texts in search of meaning, rather than one mainly concerned to piece together the fragments of record evidence. His sensitivity to the forms of art, visual and literary, written and spoken, have also made him a conscious stylist as a lecturer, and many of his accomplishments in this respect are displayed in this book. Parts of it began life as lectures. But more than this, the coherence of the chapters (and the sections of the longer chapters), even their fairly predictable length, are the results of his lecturing experience.

On the other hand, the danger that lecture-chapters will not naturally flow into one another in a continual sequence has here been happily avoided. The author sustains the lively pace of allocation; there are no dull stretches of exposition in the middle of so big a book. A story emerges from the succession of events as the Frankish encounter with Gallo-Roman Christianity grows into a Frankish responsibility for the church universal. The Merovingians receive generous treatment, with chapters on the monasteries, the saluts, the church councils and the papacy. The Frankish concern for missionary activity leads the way to an account of the making of the German church. All this is managed with great economy and with no sense of rush. More than half the book is still left for the Carolingians, down to Charles the Bald.

There are some flashes of humour, and the unexpected reference to the modern world. "A ninth-century peasant might have a clearer notion of sanctity than is possible today", or the observation that if Hincmar of Reims had had his way "Carolingian society would have been a police-state". Such remarks offer two striking insights into the ninth century and characteristically demonstrate how far from simple it is to label these alleged "dark" ages. The author keeps up this unburied but brisk pace to the end, which, it should be said, is rather abrupt. Such a book

surely deserves to be concluded as formally as it began.

It can hardly be summarized, for it does not argue a thesis. It will be ransacked for its treasures by undergraduates using its highly detailed index for their own purposes. It is disingenuous of the author to ward off the profane in search of a textbook: they have nowhere else to look. This author's manner is not didactic, but there is much to learn from a book that distils the erudition of a lifetime, on a subject never before considered as a whole. It is dedicated to Merton College, from which I venture to infer that educated adults of many disciplines could all derive benefit by reading it. Parts of it, on heresies for example, may seem difficult. The fate of Christianity over several centuries cannot be described without reference to some matters beyond familiar intellectual horizons. This does not mean that most of it is not accessible to an intelligent reader. Neither the subject-matter, which is the survival of Christian spirituality in an unpropitious age, nor the manner of exposition, which is lucid, exact and humane, suggest that it was written for exclusively specialist attention. Professor Wallace-Hadrill's standing among specialists is not in question, but here he does not engage in academic in-fighting. Other scholars are only named in tribute to their contributions to learning; never in contradiction. It is history in the grand manner, more dispassionate than Gibbon, though more understanding of barbarism, seen without any romanticism. The treatment is comprehensive, but not exhaustive; the prose agile and aphoristic. The historian concentrates on his subject; historical dogma and cliché are banished. A book therefore of a great scholar at his peak, to be enjoyed at first reading, and savoured again and again.

D. J. A. Matthew

D. J. A. Matthew is professor of history at the University of Reading.

At home with the Visigoths

Early Medieval Spain: unity in diversity, 400-1000
by Roger Collins
Macmillan, £14.00 and £5.95
ISBN 0 333 26282 4 and 26283 2

This sprawling 600-year period of Spanish history falls into two sharply defined halves separated by the Arab invasion of the Peninsula in 711. The first half saw the demise of the Roman Empire, the establishment of the Visigothic State, and the resolution of the conflict between Arianism and Catholicism in favour of the latter, with the conversion in 587 of King Recared. Visigothic rule came to an end abruptly when, after the invasion by Berber and Arab troops, the conquered areas were governed until 756 in the name of the Caliph in Damascus. Subsequently, under the Umayyad regime, 756-1031, Islam took root, and Cordoba became the capital of al-Andalus, a recognized centre of political power and cultural excellence in the tenth century. The Christian Kingdoms in Asturias, León, Castile and Navarre gradually emerged during the same period so that Spain was divided between Muslims and Christians.

Dr Collins is clearly more at home when discussing the Visigoths and his account is a most useful synthesis of information on all aspects of their state. He reacts strongly to earlier studies, sometimes concurring but frequently modifying or rejecting the received views in favour of his own. His survey provides a fresh perspective for the period, at once original, informed and assured, which can be recommended with confidence.

Richard Hitchcock

Dr Hitchcock is senior lecturer in Spanish at the University of Exeter.

Europe's designs on Turkey

The Great Powers and the End of the Ottoman Empire
edited by Marian Kent
Alion & Unwin, £18.00
ISBN 0 04 956013 1

During the last decades of the Ottoman Empire successive regimes made increasing efforts to restore its lost vitality, to give it the political and economic blood transfusion it needed to survive the effects of disruptive nationalisms within its frontiers and the ambitions of the great European powers beyond them.

All of these powers were potential or actual predators. All of them hoped throughout this period to intensify their economic penetration of the empire, to gain concessions for the building of railways and port facilities, contracts for the supply of armaments, to the Ottoman army and navy, trading privileges, and greater influence over government policy. All of them ended by attempting, with varying determination and success, to carve out for themselves exclusive spheres of influence and control as the empire's last remnants of vitality appeared to be

acquainted with the secondary literature on early modern China as well as Europe (East and West), the footnotes to all the essays reveal a familiarity with archives in dozens of repositories, local and central, private as well as public. Perhaps the most striking feature of the book is the way in which it is written. For in the essay on "Stratford and the Byrnes controversy" Cooper's mastery of the Westwood papers led him first to question "Terence Ranger's use of that evidence" then further to a reinterpretative chapter on Stratford's role in Ireland.

John Cooper did not write a book. And while he once projected a full study of estates and landholding in the sixteenth and seventeenth centuries, it may be that the sheer bulk and diversity of his learning would have prevented that. The political manoeuvres behind the economic policy, the economic motive behind the political action never escape the comprehensive net of his knowledge. In "The Nobility of Europe" shows an

drained by the demands of the First World War. It is these ambitions, as described in this collection of seven scholarly essays.

The book begins with a survey by Ferroz Ahmad of the Ottoman Empire in its last two or three decades. It provides the Turkish background in six essays by different experts, each dealing with the Near Eastern powers - the Habsburg Monarchy, Italy, Russia, Germany, France and Great Britain. The book is the account now available in English of perhaps in any language of the international aspects of the last years of Ottoman power and the rise of the Kemalist republic.

There is a striking discrepancy, well brought out here, between the grandiose and unreal ambitions of many of the powers and the limited importance of the Ottoman Empire to them in material and down-to-earth sense. Italy, as R. J. B. Bosworth points out in an elegant and sometimes witty discussion, had no interest in Asia Minor which compared in real importance with her ambitions in the South Tyrol and the Adriatic; her policy in the Near East was essentially one of copying and trying to keep pace with the genuine great powers. Hungary, here ably dissected by P. J. Bridge, was also essentially one of prestige, of not being outdistanced by more powerful competitors.

Even Russia, as Alan Bodger makes clear in perhaps the most useful of these essays, was interested in the southern neighbour above all because of the great and increasing flow of exports through the Straits. There was a striking disproportion between the trivial direct trade with the Ottoman Empire and the cloudy and emotive sense of historical mission which made Constantinople a major focus of Russian expansionist ambition, while her naval position on the Black Sea was always so weak that she could never hope to act there effectively against the Turks. Even Germany, which from the later nineteenth century onwards built up an imposing structure of influence in the Ottoman Empire, found in the years before the First World War that it accounted for only about one per cent of her total foreign trade. It could well be argued that in the long run it was the Turks who exploited the Germans; by 1918 the Turkish government had received more than 5 billion marks in German loans and credits, most of which would not have been repaid even if the war had been won.

Businessmen hoping for profits were often more realistic than governments thinking of strategic rivalry and prestige. French financiers bled Decease's desire to obtain an equal share in the Baghdad Railway for France. British shipping lines in the Persian Gulf made a profit-sharing agreement with their Hamburg-American rivals in spite of all the efforts of Whitehall to dissuade them. Indian entrepreneurs had to be persuaded by their government to provide a pretext for official claims there. The exaggerated hopes and fears of the great powers, and the essential good-will of many of both, are expertly discussed in this well-produced volume.

So much for the traditional view. Since the pioneering work of Ilya Prigogine from the 1940s onwards, however, there has been a rival approach to the study of rates, which is known as irreversible or non-equilibrium thermodynamics. This owes little or nothing to kinetics, and has been greeted by many kineticists with very little enthusiasm; indeed, it has often been regarded by them as a branch of charity: why do we need a new approach to the study of rates, a new approach, moreover, that replaces the solid theoretical foundation of kinetics with a collection of manifestly absurd approximations, claims to be a development of thermodynamics, requires considerably more mathematics, and provides no information about mechanism?

This view is not wholly without validity, as there has certainly been obscurantist work in non-equilibrium thermodynamics that has seemed to be based rather than on evidence. It is, however, a narrow view. It would be equivalent to arguing that one cannot calculate traffic flow on a road without considering the objectives of all of the individual drivers and the characteristics of their vehicles. In truth, there are many phenomena (and these are especially common in biology) that are far too complicated to be handled by the methods of kinetics but respond well to a treatment that ignores mechanism but introduces assumptions that seem at first sight to be absurdly over-simplified.

Of the three books considered here, Peacock's scholarly work is the broadest in scope. It is, moreover, an excellent book, written in the classical tradition. Its author started his research career in association with Sir Cyril Hinshelwood, one of the first physical chemists to study biological systems, and more than once I was reminded of Hinshelwood's own writing. Taking a style that makes it enjoyable to read, the book does not shirk the mathematics. However, in between the more mathematical passages, there is a great deal of text that could be read with profit while omitting the more difficult parts. Part one is concerned with an interpretation of living systems from the point of view of irreversible thermodynamics; part two

adopts a kinetic standpoint; and part three looks forward to a synthesis of the two.

Caplan and Essig's book is more restricted in scope, being concerned primarily with the thermodynamic interpretation of energy transduction in living organisms. It is, however, also a very well written book that is well grounded in modern research in this area. Both authors are active in the field, and write clearly and with authority. Harvard also deserve praise: clearly giving the appearance of the printed page much more thought than is commonly evident in a technical book, they have produced a book that is very pleasant to look at.

Although Edsall and Gutfreund's book is concerned with equilibrium thermodynamics as applied to biochemical systems, it is not the long-awaited sequel to Edsall and Wyman's classic 1958 book *Biophysical Chemistry*. It is written at a more elementary level and seems to be intended primarily for undergraduates. Unfortunately for these readers, however, the chapter on fundamental concepts is not very clearly written, so that, for example, contradictory statements in successive sentences on page 14 about the dimensions of the gas constant are likely to confuse, as are the implications on page 17 that power is the same as energy and that resistance (in ohms) is the same as resistivity (in ohm metres). Though these might seem elementary matters, they do arise in a discussion of dimensional analysis, when it is especially important to be rigorous about dimensions. In any case, inexperienced readers will probably not be able to read through the muddled writing to the "obviously" correct meaning. Later parts of the book are, on the whole, better, and there is some useful information about the thermodynamics of aqueous solutions.

Classical thermodynamics will no doubt continue to form an essential part of the biochemist's background knowledge. However, as we try to analyse systems of greater and greater complexity, we shall need irreversible thermodynamics more and more. Kinetics can take us a long way, but it is not the whole answer.

Athel Cornish-Bowden
Athel Cornish-Bowden is lecturer in biochemistry at the University of Birmingham.

BOOKS

CHEMISTRY

Science of the possible

An Introduction to the Physical Chemistry of Biological Organization
by A. R. Peacocke

Clarendon Press: Oxford University Press, £35.00
ISBN 0 19 855359 5

Bioenergetics and Linear Nonequilibrium Thermodynamics: the steady state

by S. Roy Caplan and Alvin Essig
Harvard University Press, £31.85
ISBN 0 674 07352 5

Biothermodynamics: the study of biochemical processes at equilibrium
by J. T. Edsall and H. Gutfreund
Wiley, £15.75
ISBN 0 471 10257 1

Generations of chemistry and biochemistry students have learned that there is a clear division between thermodynamics and kinetics. In the words of Peacocke's book, "thermodynamics is the science of the possible" in the natural world. It generates no mechanisms but, rather, prescribes relationships to which all natural phenomena are expected to conform. "If one wants to know about the mechanisms that allow processes to take place, and the rates at which they do so, one must turn to kinetics. Just as in everyday life the people who prescribe laws tend to look with disdain on those who do things, so kinetics is often regarded as a humbler discipline than thermodynamics. Although it is true that classical thermodynamics was one of the great intellectual achievements of the nineteenth century, and that kinetics and mechanism must conform to its laws, it is rather sterile discipline on its own."

So much for the traditional view. Since the pioneering work of Ilya Prigogine from the 1940s onwards, however, there has been a rival approach to the study of rates, which is known as irreversible or non-equilibrium thermodynamics. This owes little or nothing to kinetics, and has been greeted by many kineticists with very little enthusiasm; indeed, it has often been regarded by them as a branch of charity: why do we need a new approach to the study of rates, a new approach, moreover, that replaces the solid theoretical foundation of kinetics with a collection of manifestly absurd approximations, claims to be a development of thermodynamics, requires considerably more mathematics, and provides no information about mechanism?

This view is not wholly without validity, as there has certainly been obscurantist work in non-equilibrium thermodynamics that has seemed to be based rather than on evidence. It is, however, a narrow view. It would be equivalent to arguing that one cannot calculate traffic flow on a road without considering the objectives of all of the individual drivers and the characteristics of their vehicles. In truth, there are many phenomena (and these are especially common in biology) that are far too complicated to be handled by the methods of kinetics but respond well to a treatment that ignores mechanism but introduces assumptions that seem at first sight to be absurdly over-simplified.

Of the three books considered here, Peacocke's scholarly work is the broadest in scope. It is, moreover, an excellent book, written in the classical tradition. Its author started his research career in association with Sir Cyril Hinshelwood, one of the first physical chemists to study biological systems, and more than once I was reminded of Hinshelwood's own writing. Taking a style that makes it enjoyable to read, the book does not shirk the mathematics. However, in between the more mathematical passages, there is a great deal of text that could be read with profit while omitting the more difficult parts. Part one is concerned with an interpretation of living systems from the point of view of irreversible thermodynamics; part two

adopts a kinetic standpoint; and part three looks forward to a synthesis of the two.

Caplan and Essig's book is more restricted in scope, being concerned primarily with the thermodynamic interpretation of energy transduction in living organisms. It is, however, also a very well written book that is well grounded in modern research in this area. Both authors are active in the field, and write clearly and with authority. Harvard also deserve praise: clearly giving the appearance of the printed page much more thought than is commonly evident in a technical book, they have produced a book that is very pleasant to look at.

Although Edsall and Gutfreund's book is concerned with equilibrium thermodynamics as applied to biochemical systems, it is not the long-awaited sequel to Edsall and Wyman's classic 1958 book *Biophysical Chemistry*. It is written at a more elementary level and seems to be intended primarily for undergraduates. Unfortunately for these readers, however, the chapter on fundamental concepts is not very clearly written, so that, for example, contradictory statements in successive sentences on page 14 about the dimensions of the gas constant are likely to confuse, as are the implications on page 17 that power is the same as energy and that resistance (in ohms) is the same as resistivity (in ohm metres). Though these might seem elementary matters, they do arise in a discussion of dimensional analysis, when it is especially important to be rigorous about dimensions. In any case, inexperienced readers will probably not be able to read through the muddled writing to the "obviously" correct meaning. Later parts of the book are, on the whole, better, and there is some useful information about the thermodynamics of aqueous solutions.

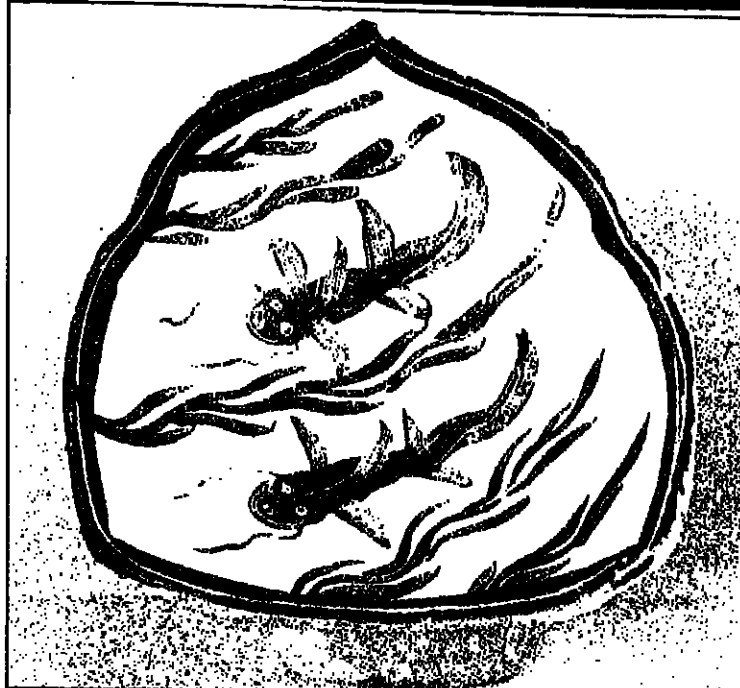
Classical thermodynamics will no doubt continue to form an essential part of the biochemist's background knowledge. However, as we try to analyse systems of greater and greater complexity, we shall need irreversible thermodynamics more and more. Kinetics can take us a long way, but it is not the whole answer.

Athel Cornish-Bowden
Athel Cornish-Bowden is lecturer in biochemistry at the University of Birmingham.

Third editions of three textbooks have been published: *Selected Experiments in Organic Chemistry* by G. K. Helmkamp and H. W. Johnson is available from Freeman at £10.95; *Fundamentals of Molecular Spectroscopy* by C. N. Banwell is available from McGraw-Hill at £8.50; and *Inorganic Chemistry: principles of structure and reactivity* by J. E. Huheey is available from Harper & Row at £11.50.

Yehoshol Wolman's introduction to chemical information retrieval skills has been published as *Chemical Information: a practical guide to utilization* by Wiley at £9.50.

A second edition of J. R. Postgate's *The Sulphate-Reducing Bacteria* has been published by Cambridge University Press at £20.00.



Leaf-shaped head-rest painted with a design of two cat-fish among water-plants (Northern Sung, eleventh century). From Basil Gray's *Sung Porcelain and Stoneware*, published by Faber & Faber at £30.00.

After the double helix

Principles of Nucleic Acid Structure
by Wolfram Saenger
Springer, DM118.00 and DM79.00
ISBN 3 540 90761 6 and 90762 9

The study of nucleic acid structure using crystallographic and other physicochemical techniques is now over thirty years old. Its beginnings were marked by the proposal of the Watson-Crick model for DNA, which itself was responsible for the era of molecular biology and ultimately for recombinant DNA technology.

Following this spectacular start, it is perhaps unsurprising that until recently much subsequent work on nucleic acid structure has tended to be regarded as second-division science, providing mainly minor points of detail. This is largely because DNA has been conceived in molecular structural terms, as a monotonously repeating biopolymer, with every structural unit

being conformationally precisely equivalent. Only within the past five years has structural evidence been obtained that has revealed to all a richness and complexity of DNA structure previously suspected only by a dedicated few.

The full ramifications of these new insights in terms of the biological specificity of particular DNA sequences and loci are only now beginning to be understood. The entirely novel left-handed "Z-DNA" double helix, first discovered by X-ray crystallographic analysis of a particular oligonucleotide sequence, is suggesting further mechanisms whereby a particular trait of DNA sequence can profoundly modulate response to proteins involved in gene regulation.

The real lesson of these thirty years of studies on the structures of nucleic acid sub-units, components and fragment sequences, is that when wisely examined, they do reveal a great deal about the flexibilities of nucleic acids themselves, and therefore cannot be disregarded as unimportant. Wolfram Saenger has long been a leader in this view, and he devotes quite half of his generally splendid book to extensive surveys of the stereochemistry of nucleic acid "building-blocks".

Principles of Nucleic Acid Structure succeeds in reviewing, sometimes in great detail, most of what is known from crystallographic and diffraction studies on these molecules. The results of other physicochemical techniques, especially those of nuclear magnetic resonance, are often quoted in extension. The inclusion of nearly four hundred references to the published literature (commendably each with the paper's title) makes this a uniquely valuable work of record. However, it is a great deal more than that. The first six chapters are designed to introduce fundamental principles in a gentle yet rigorous manner, and have much to offer the beginning graduate or advanced undergraduate interested in biomolecular structure.

Saenger's style is lucid, his English only rarely being encumbered by Germanic style. The large number of illustrations, often in two colours, are of exceptional clarity, and do much to enhance the text. The book commences with the inevitable DNA history lesson, refreshingly giving credit to pre-Watson and Crick discoveries. This is followed by thorough definitions of nucleic acid conformational notation, sugar puckering, and discussions of preferred conformations in a variety of nucleosides, nucleotides, and polynucleotides. Nomenclature in this field has in the past been notoriously confusing, with up to six different systems being in use. Saenger has used the recent recommendations of the International Union of Biochemistry and Chemistry, which, though admirably self-consistent, do conflict in several respects with the usual practices of nucleic acid crystallographers. Thus, in order to understand fully much of the past literature, it is necessary to know how these nomenclature systems are related. Unfortunately, this book fails to deal adequately with this issue.

Methodology receives a very brief treatment, with X-ray crystallography of small and large molecules, potential energy calculations and nuclear magnetic resonance being covered in a total of 21 pages. Here the treatment is inconsistent and unsatisfactory: on the one hand the most elementary features of diffraction are described, yet in the section on nuclear magnetic resonance the reader is plunged straight into advanced concepts.

Valuable and detailed chapters deal with nucleotide physical properties, base pairing, and stacking and helix stability. These go beyond the merely structural in their descriptions and bring together thermodynamic and spectroscopic data. Areas where Saenger himself has made important contributions, such as the study of modified nucleotides, are especially well covered. Oligomeric and polymeric nucleic acids are extensively described, and exceptionally well-illustrated with complementary ball-and-stick and space-filling representations. However, some of the figures seem to be incomplete. Z-DNAs are accorded a chapter of their own, which thoughtfully assesses their biological significance, as far as can be judged at present. Surprisingly, some of the more heretical DNA structures of recent years also receive attention. The remainder of the book is largely concerned with more biological aspects of nucleic acids: transfer RNAs, interactions with drugs and proteins, and DNA organization in chromatin. Relatively superficial in their coverage, these chapters do not continue the notable blend of crystallographic and other physicochemical data in earlier sections.

Despite these minor criticisms, Saenger is to be congratulated on having produced a work of scholarship that will undoubtedly be of direct use to students and workers in structural molecular biology and biophysics. It might also play a valuable role in conveying the excitement of this valuable field to a wider audience.

Stephen Neidle

Stephen Neidle is in the Cancer Research Campaign Biomolecular Structure Research Group at King's College London.

Physical and Mechanistic Organic Chemistry

Second edition

R. A. Y. JONES

The character and course of reaction mechanisms in organic chemistry are examined in detail in this thoroughly revised, updated and expanded edition of an established textbook.

Hard covers £35.00 net
Cambridge Texts in Chemistry and Biochemistry Paperback £21.00 net

Allylic Chemistry

Second edition

F. J. McQUILLIN and M. S. BAIRD

This examination of the experimental basis of allylic chemistry has now extended its coverage to include examples of terpenes, steroids, prostaglandins and macrocycles.

Hard covers £20.00 net
Paperback £7.95 net

Magnetism and Ligand-Field Analysis

MALCOLM GERLOCH

A synthesis of old and new notions straddling the disciplines of physics and chemistry, Dr Gerloch offers a means of exploiting the ligand-field properties of transition-metal and lanthanide complexes leading to a quantified chemical insight into the individual metal-ligand interactions of these molecular species.

£85.00 net

An Introduction to Speciality Polymers

Edited by N. ISE and I. TABUSHI

After discussing the preparation of speciality polymers in general terms, the contributors to this volume present a concise and lucid review of the present state of our knowledge on topics such as synthetic membranes, information transmitting macromolecules, and enzyme-like polymers.

£22.50 net

Diffusion

Mass Transfer in Fluid Systems

E. L. CUSSLER

Dr Cussler's textbook provides a clear and complete description of diffusion in fluids, the spontaneous mixing of different states that is fundamental to engineering, chemistry and biology. Numerous simple examples and numerical exercises apply the basic concepts in detail.

£32.50 net

A Time to Remember

The Autobiography of a Chemist

ALEXANDER TODD

'It is not necessary to be a chemist or even a scientist to enjoy this book. As a contemporary account of an important life, it could be recommended to anyone who may think that scientists are a race apart, or that things and not human beings claim their interest.'

The Times Higher Education Supplement £15.00 net

CAMBRIDGE UNIVERSITY PRESS

Ensuring standards

Land, Men and Beliefs: studies in early modern history

edited by G. E. Aylmer and J. S. Morrill
Hambleton Press, £18.00
ISBN 0 90728 26 5

To those who knew no more of him than the occasional article, review or intervention at a seminar, the late John Cooper could have appeared a hyper-critical, pedantic or even testy figure whose contribution to historical scholarship was combative and negative rather than creative and constructive. The importance of this varied collection

of some of his essays is that it demonstrates, as Cooper so often did himself, that such a casual impression resting upon too little acquaintance with the evidence is far from the truth.

Land, Men and Beliefs reproduces some of Cooper's best critical pieces - "The Counting of Menors" is a classic - which are also pieces of criticism in the best sense. In his analysis of the figures used by Tawney and Stone, John Cooper is not the bulldozer on the historical landscape, but rather the building inspector anxious to ensure standards and necessarily wary of large, impressive-looking historical edifices built on the shaky foundations of unreliable statistics. His interest is always in a more solid construction. Immediately following many of the critical demolitions there are the beginnings of new hypotheses and tentative pretensions which, for all the hesitations expressed, leave one confident of a firm grounding in evidence and common sense.

From his unrivalled knowledge of and perspective from the fifteenth century, Cooper was able to cast doubt upon theories of decline in the nobility's holding of great landed estates, or on the allegedly revolutionary impact of humanism on ideas of gentility in Tudor England. Both "The social distribution of land and men in England 1436-1700" and "Retainers in Tudor England" proceed from critical and other historians to some of the most suggestive and stimulating reappraisals of the position of the nobility in Tudor England. No less, the longer reviews leave one with a distinct (and for the authors uneasy) feeling that Cooper might well have written a better book on the subject himself.

For the range and depth of his learning are awesome. The political manoeuvres behind the economic policy, the economic motive behind the political action never escape the comprehensive net of his knowledge. In "The Nobility of Europe" shows an



J. M. Wallace-Hadrill

BOOKS

CHEMISTRY

A touch of colour

The Physics and Chemistry of Color: the fifteen causes of color
by Kurt Nassau
Wiley, £36.00
ISBN 0471 86776 4

The Colour Science of Dyes and Pigments
by Keith McLaren
Adam Hilger, £17.50
ISBN 085274 426 9

Organic Chemistry in Colour
by P. F. Gordon and P. Gregory
Springer, DM178
ISBN 3540 11748 2

The science of colour began with the discovery of the spectrum by Sir Isaac Newton in 1666. There are, in fact, many colours in the spectrum besides the seven arbitrarily chosen by Newton, in line with the seven notes of the musical scale. Combinations of the spectral hues give rise to colours that do not appear in the pure spectrum, such as pink or brown.

Newton was well aware that "the rays to speak properly are not coloured" and that colour is in the eye of the beholder as interpreted by the brain. Colour is perceived in the retina of the eye by three sets of photoreceptors called cones with maximum sensitivities respectively to blue, green and red. However, as the causes of colour are many and varied, colour science is a complex and wide-ranging subject which involves such aspects of physics and chemistry as optics, colour perception, colour measurement, dyes and pigments. Colour also has substantial impact on many other fields, including mineralogy, biology and psychology.

In his fascinating book, Kurt Nassau

has succeeded very well in providing a bridge between general expositions on colour and specialist monographs. It is extremely useful to have all aspects of colour covered in a single volume, and Nassau's clear explanations provide answers to many basic questions: for example, why the sky is blue, why ruby is red and emerald green, why gold is yellow, why chromium can produce almost any colour, and how it is that opals and the wings of certain butterflies are capable of displaying all the colours of the rainbow.

As no single approach can explain all its causes, Nassau classifies colour into fifteen groupings under five main theories: vibrations and simple excitations; transitions involving ligand field effects; transitions between molecular orbitals; and geometrical and physical optics. Although such a detailed classification is inevitably somewhat arbitrary and there is considerable overlap in the groupings used (for instance, both ligand field theory and band theory may be viewed as special cases of molecular orbital theory), nearly all the causes of colour, whether occurring as natural phenomena or of animal, vegetable, mineral or of man-made origin, involve the excitation of electrons - including the selective absorption and emission of light as well as its reflection and scattering. For example, in the highly restricted field of dark blue gemstones there are at least six different causes of colour. It is indeed remarkable that so many distinct causes of colour should apply to that small band of electromagnetic radiation to which the eye is sensitive, but it is only in this narrow optical region that the energy of light is well attuned to the electronic structure of matter, with its wide diversity of colourful transitions.

Concepts fundamental to a proper understanding of the various phenomena described are well covered, so no highly specialized knowledge is required. After a basic introduction to the nature of light and colour and quantum theory in part one, Nassau then discusses the colours caused by incandescent objects, flames and vapour excitation light sources, including auroras and lasers, together with the vibrations of molecules that cause the blue colour in water and ice. In part



Newton using a prism to study the decomposition of light.

three he deals with the effect of the ligand field on electronic energy levels, a phenomenon that leads to colour in compounds of the transition elements and which explains the colour in most inorganic pigments and many dyes, as well as fluorescence and crystal lasers. In part four, on colours caused by molecular orbitals and their interaction with light, he discusses colours in most organic substances such as vegetable, animal and synthetic dyes and pigments. This category, in which charge transfer is involved, also includes some minerals and gemstones, such as lapis lazuli and blue sapphires. Part five deals with energy band formalism, which is chiefly responsible for the colour of metals and alloys, some inorganic substances such as the red mercury ore cinnabar, some gems such as blue and yellow diamonds, and colour centres as in amethyst. Light-emitting diodes and semiconductor lasers are also included in the discussion.

After a section on the theory of geometrical and physical optics, which accounts for a wide range of colour phenomena including those derived from dispersion, scattering, interference and diffraction, a final section deals with a variety of colour-related topics, including dyes and pigments, bleaching and fading, coloured glasses and gemstones, biological coloration, vision, fluorescence, phosphorescence, lasers, electroluminescence, and art preservation.

An extensive series of appendices deals with advanced topics such as electronic configurations, orbitals, ligand field theory and molecular orbital theory, dispersion in a prism,

interference in a thin film, and diffraction in a thin film, and diffraction by a layer grating. Over 200 drawings, 30 tables and 31 colour photographs aid the imagination. And the detailed bibliography should enable specialists and non-specialist readers to pursue areas of particular interest.

On a much more modest scale, Keith McLaren's wide-ranging book briefly covers the historical and chemical development of dyes and pigments, the physical and chemical processes involved in the mechanisms of dyeing, fading and tendering, and colour perception. Other chapters deal with the various methods of colour measurement and matching processes especially important in many industrial applications. However, although the author offers a very readable introduction to the various scientific and technological aspects of colour, dyes and pigments, he does not attempt an exhaustive treatment of any particular theme. Some 300 references are included.

Gordon and Gregory's book, which will appeal to mainstream organic chemists rather than colour technologists, is a successful attempt to cover the chemistry of dyes from the point of view of organic chemistry. Appropriate modern theories, especially the use of molecular orbitals in interpreting the relationship between colour and molecular structure, are well covered. Readers must possess a knowledge of the basic principles of organic chemistry; and basic colour physics and colour perception are not included.

Chapter one, which provides a concise account of the development of dyes, deals with natural products as well as current synthetic materials and

future trends. Chapter two then classifies industrially important dyes according to their chemical structure and has a useful section on fundamental processes used in the synthesis of various intermediates and of the dyes themselves. Particularly valuable is its coverage of aromatic heterocyclic compounds, a topic which is of considerable current importance but which is not dealt with appropriately elsewhere. Two lengthy chapters then consider the chemistry of dyes derived from the azo and anthraquinone chromophores. In both categories, tautomerism, metal complexes and colour constitution are discussed in detail.

Although a fifth main section looks at vat, indigoid, phthalocyanine, polymethine, di- and tri-aryl carbonyl and nitro dyes, only the most important and interesting aspects of these dyes are covered. A final chapter then deals with application and fastness properties of dyes, including light, wet and light fastness, photobleaching, metamerism and solvatochromism.

To produce this lucid and very readable book, which makes extensive use of schemes and figures, the authors have clearly drawn on their own experiences. It is a pity, however, that the text is not referenced, although each chapter does conclude with an extensive bibliography of general accounts, reviews and original papers. I can highly recommend the book to undergraduates of colour chemistry.

Geoffrey Hallas

Geoffrey Hallas is senior lecturer in colour chemistry at the University of Leeds.

Contorted chairs

Allylic Chemistry (second edition)
by F. J. McQuillin and M. S. Baird
Cambridge University Press,
£20.00 and £7.95
ISBN 0 521 23987 7 and 28391 4

Allylic chemistry consists of the study of the preparation and properties of carbocyclic rings and as such occupies an important place in the teaching of organic chemistry to undergraduates. It is traditionally here, at first-year or second-year level, that important concepts such as strain, conformation, aromaticity, and the effect of stereochemistry on reactivity, are first introduced and illustrated.

In addition, a lot of space would have to be done in terms of building up the repertoire of basic reactions necessary for more advanced courses. Many natural products, being polycyclic compounds themselves, have been "natural" proving grounds for the theories of allylic chemistry, and it could be argued that much of the impetus behind the systematic study of

allylic compounds has stemmed from a desire to generalize discoveries first made in natural product chemistry.

McQuillin and Baird provide a straightforward account of this branch of organic chemistry, discussing clearly and illustrating well most of the topics one would expect to see in a book at this level. A particularly praiseworthy feature is the liberal provision of specific examples of the preparation of particular compounds. This means that the development of the subject is well grounded in reality thus avoiding the woolly generalizations which might otherwise arise. A fair amount of basic chemical knowledge is assumed, but this is reasonable given that the book is intended for someone who has already followed a basic course in organic chemistry.

My chief reservation about a wholehearted recommendation of the book is that in an area of chemistry such as this, in which stereochemistry is so crucial, the authors have not been well served by their artists and publishers with regard to three-dimensional drawings and diagrams. To take just one of the cornerstones of the subject, the drawing of substituted cyclohexanes in the chair conformation, I spend much time as a tutor getting undergraduates to make such drawings care-

fully with all axial bonds parallel to the sixfold alternating axis and all equatorial bonds parallel to the next but one bond in the ring. In not one of the many chair conformations drawn in the book did I find an entirely satisfactory version. There are also problems over the inconsistent use of dotted lines in many formulae which cloud the stereochemical issue on several occasions.

The book is refreshingly free from obfuscations, although one or two jargon words and phrases do creep in without explanation. For example, the term "displacement reaction" used particularly where acetoxylation of cycloalkyl sylates are discussed. This interesting and informative book deserves to be read by all undergraduates studying organic chemistry, but something ought to be done about the three-dimensional formulae before the next revision.

G. H. Whitham

G. H. Whitham is university lecturer in organic chemistry at the Dyson Perrins Laboratory and a fellow of Pembroke College, Oxford.

BOOKS

CHEMISTRY

Molecular design

Quantum Chemistry: the development of *ab initio* methods in molecular electronic structure theory
by Henry F. Schaefer, III
Clarendon Press: Oxford University Press, £15.00
ISBN 0 19 55183 5

Quantum Chemistry
by Raymond Daudel, Georges Leroy, Daniel Peeters and Michel Sana
Wiley, £48.50
ISBN 0471 90135 0

Molecular orbital theory has been around since it was first introduced by Hund, Mulliken and Lennard-Jones in the 1930s. It soon eclipsed the rival valence bond theory for providing a theoretical description of the chemical bond. Conceptually, molecular orbital theory parallels the simple treatment of atoms where each constituent electron can be of a particular type. In atoms we have s electrons and p electrons; in molecules the levels depend on the symmetry of the molecule, so that, for example we may have σ and π electrons. The essential point is that the individual electrons have their own identifiable properties described quantitatively by a mathematical function, a molecular orbital, appropriate for the particular electron.

Calculating molecular orbital wave functions by solving the Schrödinger wave equation for a molecule made little headway until the advent of computers. Now the dramatic developments in computing power have led to a mushrooming in applications of molecular orbital computer packages. Early molecular orbital calculations were crude and often semi-empirical, using experimental data to fudge answers rather than performing exactly all the millions of integrals which may be implied by a rigorous

solution of Schrödinger's differential equation. *Ab initio* calculations use no empirical data but grind through all the integrals using brute force mathematical techniques and large amounts of computer time and storage. Molecular orbital computer programs of the *ab initio* variety, representing some of the biggest computer programs ever written (some hundreds of thousands of Fortran statements), have provided chemists with calculations of the energies of molecules as a function of molecular shape, answering questions such as "what is the bond angle in H_2O ?" They provide details of electron density in chemical bonds, dipole moments and a host of less familiar information. In principle, it is possible to compute any physical observable of a molecule once you have a molecular orbital wave function.

The sub-discipline which the computer has fired is called quantum chemistry. It is a thriving industry. Quantum chemistry boasts a program exchange whose newsletter, *QCPE Bulletin*, recently pointed out that the 1965 Western report on the state of quantum chemistry did not even acknowledge the existence of "computational chemistry". By contrast the 1983 equivalent, the Pimentel report, makes clear that the landscape of chemistry has changed, with research patterns modified as a result of advances in computer technology. Molecular orbital theory now almost ranks with X-ray crystallography and nuclear magnetic resonance spectroscopy as a tool for investigating molecules.

Fritz Schaefer, professor of chemistry at Berkeley, is to many the guru of *ab initio* calculations, responsible for some of the most accurate work which, for small molecules like methane, may successfully challenge experimental spectroscopic structure determination. His book is aimed at the majority of users of computer packages who are no longer professional theoreticians but rather experimentalists with no time to absorb the whole explosive history of the subject.

Schaefer quotes the cynical "running a few molecular calculations doesn't make one a theorist any more than sleeping in one's garage makes one an auto mechanic". Having collected a list of the landmark papers in *ab initio* molecular electronic structure methods, he presents with each more of an exegesis than an abstract. His book is unusual and worthwhile and can be recom-

mended very positively. There is probably no better way of gaining a feel for the subject and becoming comfortable about what constitutes the state of the art.

Applications now go beyond answering the obvious question as to which shape of a molecule has the lowest energy. Excited electronic states; potential energy surfaces for fundamental reactions; properties of astrophysical species; electron distributions; and finally even molecular pharmacology and industrial chemistry have been added to the list. Paralleling the increase in research has come the predictable publishing expansion: three new specialist journals, an editorial in the *Wall Street Journal* and inevitably a plethora of new texts.

The new book from Daudel and his colleagues joins a very crowded part of the market and seems unlikely to displace firm favourites such as P.W. Atkins' *Molecular Quantum Mechanics* or excellent new detailed accounts like *Modern Quantum Chemistry* by A. Szabo and N. S. Ostlund. The contributions of various authors are clearly discernable both in style and content, those authors whose first language is not English not receiving the help from editors they so clearly need. I wonder, for example, whether Daudel's "theorie des loges" might have gained wider acceptance had the French word "loges" been rendered in English as something other than "logs".

Of the good parts, however, I must cite particularly those sections on the practice of calculations and on collisional processes. The former gives as good an account as you are likely to find of the actual practice of using a molecular orbital computer program, including details of what the program is actually doing, while the latter relates to chemistry's biggest unsolved problem, the prediction of rates of reaction.

Whereas experimental research suffers from ever escalating costs, the price of computers is tumbling. Very large-scale integration technology is making the desk-top computer as powerful as yesterday's mainframe. The era of computer-aided molecular design has dawned.

Graham Richards

Graham Richards is university lecturer in physical chemistry and fellow of Brasenose College, Oxford.

Industrial problems

Problem Solving in the Chemical Industry
by R. J. Casey and M. J. Frazer
Pitman, £8.95
ISBN 0 273 02034 X

Undergraduate chemistry courses now generally contain an investigative problem as part of the course, the performance in the problem and the writing up of a dissertation counting towards the final assessment. Small investigative problems are part of some school courses and are important parts of the overall course. Students learn independence, show great interest, and learn how to tackle problems. However, most of the problems are academic ones, strongly related to research projects within the department, so students are not becoming aware of how industry sees its research problems. By contrast, the use of teaching companies and case studies in some engineering, business studies and economics courses might provide a better introduction to real life problems than is obtained in most physical science courses.

It is fruitful to compare the striking differences in the ways academics and industrialists tackle their research problems. Ernest Rutherford, one of the most successful research academics of this century, made fundamental discoveries - many of which (radioactive transformation, nuclear fission, and neutrons) are now used routinely in industry. On the other hand, lack of collaboration between education and industry, and their different attitudes to research, have been the subject of much debate. As Lord Plovers has said, "a university is a place of high scholarship". If we are to have a better understanding of the world, we need to have a better understanding of the world of industry, by any standards, was a practitioner of the art of high school-

ship - nevertheless, a practitioner with very considerable influence on industry.

In their most interesting book, Dr Casey and Professor Frazer introduce us to eight problems from industry which have been solved to the satisfaction of industry. As I read the book, I was immediately drawn to a contrast between the probable attitude of Rutherford (and Flowers) and the attitude of chemical industry to research. Each of the pieces of research described were allegedly carried out for a specific reason and the research stopped when the immediate aim was achieved and the reason disappeared. Although Rutherford must have had a long-term strategy for his research, he presumably never contemplated terminating a line of work; he must, however, have made value-judgments as to when to change direction.

In Casey and Frazer's book although two of the problems described were solved "successfully" (the synthesis of azalaic acid and the electrowinning of uranium), for economic reasons the processes developed were never used. Does this mean that this and similar research has been unsuccessful? I am sure not: as with Rutherford's work, the results will undoubtedly lead eventually to industrially important processes and as an "academic level" have led to a better understanding of chemistry. To industry, however, these projects are unsuccessful in the sense that the resources used for the work described did not lead to an immediately marketable product; and certainly the projects were terminated at a stage that still had some interest in chemical terms.

The importance of Casey and Frazer's book lies in the fact that it can be used to introduce students at many levels (though it would be extremely difficult for school pupils) and teachers to the manner in which chemical industry tackles problems. Readers will also be made aware of some extremely interesting chemistry not generally part of school or undergraduate courses. However, the book could not be used for case-study work on these particular problems without major amplification (though good lists of references are given). Indeed, there

is still a dearth of material for use in industrial case-studies in chemical teaching.

An introductory chapter summarizes possible techniques of problem solving, but I doubt whether it is possible to receive lessons on this subject, as both at theoretical and practical levels a great deal of specific knowledge is essential. Learning through an investigative approach may be stimulating, but the way in which real research is carried out does emphasize the need for a very solid cognitive base.

Although this book could be immensely stimulating for general science-based readers and non-scientists wishing to see how industrial scientists work, they might find it very heavy going because of lack of background. However, it should highlight both the challenge and interest of industrial research and the differences in approach compared with academic research.

D. W. A. Sharp

D. W. A. Sharp is Ramsay Professor of Chemistry at the University of Glasgow.

A paperback edition of R. M. Harrison and D. P. H. Laxen's *Lead Pollution: causes and control* has been published by Chapman & Hall at £7.95. For a review, see *THE TIMES* of 15th January, 1982.

A second edition of F. W. Fifield and D. Kealey's *Principles and Practice of Analytical Chemistry* has been published by the International Textbook Company (Blackie) at £13.95. A new chapter introduces the basic principles and vocabulary of microprocessor-controlled and computerized instrumentation.

A second, revised, updated and expanded edition of R.A.Y. Jones's *Physical and Mechanical Organic Chemistry* is shortly to be published by Cambridge University Press at £35.00 and £14.00. For a review, see *THE TIMES* of 23rd May, 1980.

Inorganic exotica

Modern Inorganic Chemistry
by William L. Jolly
McGraw-Hill, £26.50
ISBN 007 032760 2

William Jolly is widely respected for his contributions to inorganic chemistry. In that he practices at one of the great intellectual crossroads of our day (Berkeley), this is more than just one man's account of his subject. Rather, it is an exceptionally up-to-date, integrated and balanced view as seen through one man's mind.

As a "greatly expanded and updated version" of *The Principles of Inorganic Chemistry* (1976), the stated objective of the book is "to provide a systematic discussion of the important phenomena of modern inorganic chemistry... The large amount of descriptive material is organised topically rather than in a periodic table arrangement". However, although much descriptive material is given, it cannot be pretended that this is the place to look for accounts of the halogen chemistry of gallium, or the oxycides of nitrogen and phosphorus. There are no s-block and p-block sections as such. Indeed, there is very little comment on the group and periodic trends. Nevertheless, as the author reminds us, "pedestrian data can always be found in handbooks and compendia". In short, this book could more accurately have been entitled *Modern Physical-Inorganic Chemistry*.

If you believe that chemistry graduates should have a sound factual basis of the preparative chemistry of the elements, firmly related to group and periodic properties, in order to inform their thinking on the phenomena of the subject, then Jolly's book should be approached via one or two of the small paperback summaries of such material. This is what many students do anyway, if only to orientate themselves within the richly-populated landscape of F. Albert Cotton and Geoffrey Wilkinson's *Advanced Inorganic Chemistry*, let alone

attempting an ascent of the more physically-oriented range of works.

Although Jolly covers a remarkable range of topics, in general he avoids superficiality. Each section is tightly written, often packing a surprising amount into the space. The strict beginner may find this a little tough, but problems are provided in each chapter (answers are given for about half of these) which may help extend understanding of the material. Some parts - for example, on symmetry and group theory - are clearly intended as appetite whetters rather than as complete instruction. Set pieces are covered well, often with comment on trickier aspects, and a healthy emphasis on bonding theory is maintained. Not so, however, the chapter on the solid state.

Other topics treated include kinetics and mechanisms of gas-phase reactions; one-dimensional, two-dimensional and three-dimensional metals; and semiconductor materials. There are three outstandingly good chapters on homogeneous catalysis, heterogeneous catalysis, and biological systems. The book is full of up-to-date examples and exotica, and accurately reflects current emphases, including such areas as cluster chemistry, and aspects of the energy problem, although little is said otherwise about organometallics. There are some useful tabulations of data, several helpful appendices, and full subject and formula indices. SI units are something "most working chemists" can safely neglect: traditional units are used in the text.

This stimulating book, with its more than usually inclusive view of the borders of the subject, can be recommended as a strong contender in the undergraduate textbook market. To pre-empt development of the "silver chloride is a green gas" syndrome, however, I would still want to insist on an accompanying book(s) on descriptive inorganic and organometallic chemistry.

David Adams

David Adams is reader in physical-inorganic chemistry at the University of Leicester.

New Chemistry Titles from Oxford Science Publications

Theory of molecular fluids:

Volume 1 - Fundamentals

C. G. GRAY and K. E. GUBBINS
Provides for the first time a detailed account of the effects of molecular orientation on the physical properties of fluids.
0 19 855602 0 £80, 640pp., available June 1984

Structural inorganic chemistry

Fifth Edition

A. F. WELLS
Incorporates many revisions and changes since the last edition of this widely acclaimed work appeared in 1975, including 80 new figures and text diagrams.
0 19 855370 8 £76, 1048pp., over 1000 illustrations

Quantum chemistry:

The development of *ab initio* methods in molecular electronic structure theory
HENRY F. SCHAEFER III
Written by one of the pioneers of modern quantum chemistry, this book presents a critical evaluation of 149 landmark papers appearing between 1928 and 1983.
0 19 855183 5 £15, 186pp., available June 1984

Electron correlation in molecules

S. WILSON
Describes some of the significant progress on the problem of electron correlation in molecules achieved in recent years.
0 19 855617 9 £40, 304pp., available June 1984

The Royal Microscopical Society

Microscopy Handbooks
A major new series of handbooks for all users of optical and electron microscopes from Oxford University Press and the Royal Microscopical Society

Specimen preparation for transmission electron microscopy of materials

P. GOODHEW
A practical handbook for all who prepare specimens for electron microscopy of materials.
0 19 856403 1 £22.95, 48pp.

The operation of the transmission electron microscope

D. CHESCOE and P. GOODHEW
An introductory handbook enabling the student and user to make the most efficient use of the transmission electron microscope.
0 19 856402 3 £22.95, 48pp.

Oxford University Press

WILEY CHICHESTER, NEW YORK, BRISBANE, TORONTO, SINGAPORE

THE THIRD DIMENSION IN ORGANIC CHEMISTRY
by A. Basile, Department of Chemistry, The Open University, Milton Keynes
This book is concerned with organic stereochemistry, or chemistry in space, but it covers more than a straightforward description of molecular shapes and their relationships. In particular it includes a study of some common organic reactions from a stereochemical viewpoint. Thus, the title of this book is intended as both a description of stereochemistry and a metaphor for the way in which stereochemistry dominates modern organic chemistry.
0471 80189 X 256pp February 84 £7.95

ORGANIC CHEMISTRY, 3rd Edition
by T.W.G. Solomon, University of South Florida
This is a new and revised edition of the most successful organic chemistry text published in recent years. It incorporates a "functional group organization" that allows presentation of most of the important organic reactions early in the course. It uses biological examples and topics to illustrate the basic principles of organic chemistry, and includes many example problems and graded end-of-chapter problems.
0471 87033 3 1176pp February 84 (cloth) £29.50
0471 88383 0 1176pp February 84 (VME) £14.95

PROBLEMS FOR INORGANIC CHEMISTRY
by B.B. Douglas, University of Pittsburgh; D.H. McDaniel and J.J. Alexander, both of the University of Cincinnati
This problems book is designed as a self-study aid. Detailed solutions are presented for the problems in our text, *Concepts and Models of Inorganic Chemistry, 2nd Edition*, with a few additional problems added to each set to provide more complete coverage of an area or to give a greater challenge. The topics covered are usually included in upper level undergraduate or graduate inorganic courses.
0471 88066 6 204pp September 83 (paper) £12.30

CHEMICAL INFORMATION
A Practical Guide to Utilization
by V. Weinman, Department of Organic Chemistry, The Hebrew University of Jerusalem
This book is designed to teach chemists the availability and practical usage of chemical literature. It provides instruction on how to keep up-to-date and demonstrate the best way to locate required information. The emphasis is on practical search problems. The various sources available for solving problems are described and a critical evaluation of the results is included.
0471 10319 8 206pp July 83 £9.50

For further information please write to the Textbook Manager - Inspection copies of certain titles are available.

John Wiley & Sons Limited
Baffins Lane, Chichester, Sussex, PO19 1UD, England

CLASSIFIED ADVERTISEMENTS

The Times Higher Education Supplement

to place advertisements write to or telephone:

The Advertisement Manager,
The Times Higher Education Supplement,
Priory House, St John's Lane, London EC1M 4BX.
Tel: 01-263 3000. Telex 264971

Rates:

Classified Display - £11.80 psc
Minimum size: 9cm x 1 col @ £106.20
Classified Linage - £2.30 per line
Minimum 3 lines - @ £6.90
Box number - £2.00

copy deadlines:

Classified Display:
Friday in the week prior to publication
Classified Linage:
Monday 10.00 am in the week of publication

Universities

HONG KONG BAPTIST COLLEGE

Founded in 1956, Hong Kong Baptist College is now a public-funded institution of higher education offering full-time post-graduate level courses in 17 departments grouped under 4 Faculties, viz. Arts, Business, Science, and Social Sciences. The College's educational philosophy is that of whole-man education grounded in Christian heritage. Accordingly every course is designed to be broad-based with the component of major studies, liberal education, and complementary studies, and oriented towards a number of career goals.

The College is developing new courses leading to the award of the Bachelor's degree. Built on the College's liberal education traditions, some of these courses will adopt a course structure of combined studies in a number of disciplines or a multi-disciplinary structure. The current student enrolment is 2,100 and the plan is to expand to 3,000 by the end of this decade. To meet the challenge of new development the College is prepared to fill a number of posts as soon as possible.

Applications are invited for the following vacant posts tenable in September 1984 or earlier:

HEAD OF ECONOMICS DEPARTMENT

Candidates should have (a) a Master Degree, preferably a Ph.D. degree with speciality in the combination of international finance/foreign exchange/Chinese economy/managerial economics; (b) substantial post-graduate research, research or administrative experience in a foreign academic institution.

SENIOR LECTURER IN BUSINESS MANAGEMENT DEPARTMENT

Candidate should have (a) a MBA degree, preferably a Ph.D. degree with speciality in the general management area; (b) substantial teaching and industrial experience. Familiarity with the local business environment would be an advantage.

LECTURER IN ACCOUNTING DEPARTMENT

Candidates should have (a) at least a good honours degree in Accounting; (b) considerable teaching or professional experience in areas: taxation, auditing, company law, accounting information systems.

Salary Scales:
Department Head & Senior Lecturer:
HK\$14,680 to HK\$19,030 p.m. by 5 increments
Lecturer:
HK\$7,870 to HK\$14,010 p.m. by 12 increments

Terms & Conditions of Service

Appointment will be made on supernumerary terms (College 15%, appointee 5%). Other benefits include vacation leave (about 3 months after every 21 months of service), medical & dental benefits for appointee and family, and subsidised housing for appointee on salaries at HK\$12,080 p.m. and above. Overseas appointees may be considered for a 2-year gratuity benefit contract and passages allowance.

Application Procedure

Applications with detailed personal data and academic vitae, contact phone number should be sent to the Personnel Secretary, Hong Kong Baptist College, 224 Waterloo Road, Kowloon, Hong Kong before 12th June, 1984.

UNIVERSITY OF EAST ANGLIA

Norwich

TEMPORARY LECTURESHIP IN NEUROPHYSIOLOGY

Applications are invited for a one-year temporary Lectureship in the School of Biological Sciences commencing 1st October, 1984. The person appointed will be expected to teach in the field of cellular and biological aspects of neurophysiology. The School is well equipped for research in neurophysiology and the successful applicant will be encouraged to pursue his own research project. Opportunities also exist for collaborative research in the electrophysiology of peripheral innervation, patch-clamping techniques, plant electrophysiology and electrophysiology of the eye. Salary will be dependent upon age and experience with a minimum of £21,125 p.a. (under review) plus US\$ benefits.

Applications (three copies) which should include curriculum vitae, including exact date of birth, together with the names and addresses of three persons to whom references may be made should be lodged with the Establishment Officer, University of East Anglia, Norwich NR4 7TJ, before 10.00 a.m. on 11th June 1984. No forms of application are issued.

University of London

Queen Mary College

INFORMATION TECHNOLOGY LECTURESHIP

LECTURESHIP

Applications are invited for a new research-related

LECTURESHIP

in the Computer Science

Department. The successful

applicant will be expected to

teach and supervise research

in human-machine interaction

and to contribute to the

development of the Department's

research programme. The

successful candidate will be

responsible for supervising

graduate students and for

conducting research in the

field of human-machine

interaction. The successful

candidate will be expected to

teach and supervise research

in human-machine interaction

and to contribute to the

development of the Department's

research programme. The

successful candidate will be

responsible for supervising

graduate students and for

conducting research in the

field of human-machine

interaction. The successful

candidate will be expected to

teach and supervise research

in human-machine interaction

and to contribute to the

development of the Department's

research programme. The

successful candidate will be

responsible for supervising

graduate students and for

conducting research in the

field of human-machine

interaction. The successful

candidate will be expected to

teach and supervise research

in human-machine interaction

and to contribute to the

development of the Department's

research programme. The

successful candidate will be

responsible for supervising

graduate students and for

conducting research in the

field of human-machine

interaction. The successful

candidate will be expected to

teach and supervise research

in human-machine interaction

and to contribute to the

development of the Department's

research programme. The

successful candidate will be

responsible for supervising

graduate students and for

conducting research in the

field of human-machine

interaction. The successful

candidate will be expected to

teach and supervise research

in human-machine interaction

and to contribute to the

development of the Department's

research programme. The

successful candidate will be

responsible for supervising

graduate students and for

conducting research in the

field of human-machine

interaction. The successful

candidate will be expected to

teach and supervise research

in human-machine interaction

and to contribute to the

development of the Department's

research programme. The

successful candidate will be

responsible for supervising

graduate students and for

conducting research in the

field of human-machine

interaction. The successful

candidate will be expected to

teach and supervise research

in human-machine interaction

and to contribute to the

development of the Department's

research programme. The

successful candidate will be

responsible for supervising

graduate students and for

conducting research in the

field of human-machine

interaction. The successful

candidate will be expected to

teach and supervise research

in human-machine interaction

and to contribute to the

development of the Department's

research programme. The

successful candidate will be

responsible for supervising

graduate students and for

conducting research in the

field of human-machine

interaction. The successful

candidate will be expected to

teach and supervise research

in human-machine interaction

and to contribute to the

development of the Department's

research programme. The

successful candidate will be

responsible for supervising

graduate students and for

conducting research in the

field of human-machine

interaction. The successful

candidate will be expected to

teach and supervise research

in human-machine interaction

and to contribute to the

development of the Department's

research programme. The

successful candidate will be

responsible for supervising

graduate students and for

conducting research in the

field of human-machine

interaction. The successful

candidate will be expected to

teach and supervise research

in human-machine interaction

and to contribute to the

development of the Department's

research programme. The

successful candidate will be

responsible for supervising

graduate students and for

conducting research in the

field of human-machine

interaction. The successful

candidate will be expected to

teach and supervise research

in human-machine interaction

and to contribute to the

development of the Department's

research programme. The

successful candidate will be

responsible for supervising

graduate students and for

conducting research in the

field of human-machine

interaction. The successful

candidate will be expected to

teach and supervise research

in human-machine interaction

and to contribute to the

development of the Department's

research programme. The

successful candidate will be

responsible for supervising

graduate students and for

conducting research in the

field of human-machine

interaction. The successful

candidate will be expected to

teach and supervise research

in human-machine interaction

and to contribute to the

development of the Department's

research programme. The

successful candidate will be

responsible for supervising

graduate students and for

conducting research in the

field of human-machine

interaction. The successful

candidate will be expected to

teach and supervise research

in human-machine interaction

and to contribute to the

development of the Department's

research programme. The

successful candidate will be

responsible for supervising

graduate students and for

conducting research in the

field of human-machine

interaction. The successful

candidate will be expected to

teach and supervise research

in human-machine interaction

and to contribute to the

development of the Department's

research programme. The

successful candidate will be

responsible for supervising

graduate students and for

conducting research in the

field of human-machine

interaction. The successful

candidate will be expected to

teach and supervise research

in human-machine interaction

and to contribute to the

development of the Department's

research programme. The

successful candidate will be

responsible for supervising

graduate students and for

conducting research in the

field of human-machine

interaction. The successful

candidate will be expected to

teach and supervise research

in human-machine interaction

and to contribute to the

development of the Department's

research programme. The

successful candidate will be

responsible for supervising

graduate students and for

conducting research in the

field of human-machine

interaction. The successful

candidate will be expected to

teach and supervise research

in human-machine interaction

and to contribute to the

development of the Department's

research programme. The

successful candidate will be

responsible for supervising

graduate students and for

conducting research in the

field of human-machine

interaction. The successful

candidate will be expected to

teach and supervise research

in human-machine interaction

and to contribute to the

development of the Department's

research programme. The

successful candidate will be

responsible for supervising

graduate students and for

conducting research in the

field of human-machine

interaction. The successful

candidate will be expected to

teach and supervise research

in human-machine interaction

and to contribute to the

development of the Department's

research programme. The

successful candidate will be

responsible for supervising

graduate students and for

conducting research in the

field of human-machine

interaction. The successful

candidate will be expected to

teach and supervise research

in human-machine interaction

